AMERICAN AGRICULTURIST

For the Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME XL.—No. 7. NEW YORK, JULY, 1881. NEW SERIES—No. 414.

A FARMER'S CLAM BAKE.—*Designed and Engraved for the American Agriculturist.*

The recreations of farmers are greatly influenced by their location. Those who live near the Great Lakes have their fishing excursions to some favorite locality upon the beach of these great inland seas. Those of Northern New York find The Thousand Isles, or some other point on the St. Lawrence attractive as a fishing resort. All who are within reach of salt water make "a shore day," and wend their way to the ocean or some of its inlets, where a change of air and mode of living are often of great benefit. In those portions of New England connected by rail or otherwise with Narragansett Bay, the Clam-bake is the favorite recreation. It may be that the farmers of a neighborhood make up a party to go to one of the many shore resorts to pass the 4th of July, or to celebrate the completion of the harvest, or, what is quite often the case, the materials for a shore festival are brought to the inland farm, and the Clam-bake, which is always the chief end of shore excursions, is enjoyed under the shade of the trees at home. Whether the people go to the Clam-bake or the Clam-bake comes to the people, the real, genuine thing is not known outside of a circle in communication with Narragansett Bay in Rhode Island, for no where else are such clams found, and nowhere else is the cooking of them so well understood. To make a bake, a circular hearth is paved with large stones, and if the bake is to be a large one, some loose large stones are placed here and there on the hearth. Then a fire is built, and there should be an abundance of fuel to heat the stones to a dull redness. When the fire has burned down and a good bed of coals is left, these are swept off by means of a brush of twigs, and at once the clams are turned upon the hot stones, in a compact heap, and quickly covered with sea-weed; clean rock-weed is put on next to the clams, and then the drift-weed piled on. If sea-weed is scarce, a piece of old canvas is put over the heap, the object being to retain all the steam and heat possible. This is the plain bake of clams only, but it is greatly varied; fish of various kinds, cleaned and wrapped in cloths; crabs and lobsters; green corn with all but the thin inner husk removed, and various other things, even spring chickens, are placed among the clams before the sea-weed is put on. When the

COPYRIGHT, 1881, BY ORANGE JUDD COMPANY.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

master of the bake proclaims that all is ready, a second invitation is not needed. In the primitive style of the writer's boy days, each one found something that would serve for a seat, if only a big stone, and all the guests gathered around the heap, but the present method is that shown in the engraving, where a temporary table is spread, and the clams and other contents of the bake are served in large tin pans. Each person is provided with a cup of melted butter, to which he adds vinegar, pepper, etc., at discretion. The clam is removed from his open shell and taken by its syphon (commonly "snout"), dipped in the butter and conveyed to the mouth. The uninitiated find it a little awkward at first, but after the first clam no further instruction is needed. The shore rule is not to stop eating so long as one can see over the heap of shells in front of him.

Contents of This Number.

[Articles marked with a star (*) are illustrated; the figure with the star indicates the *number* of illustrations.]

Ailanthus, The, in Towns and Cities.....275
Barbed Fence Suit, The Great.....288
Barn, A Convenient Small.....2*..278
Barrels, Kerosene.....272
Bee Notes for July.....272
Boat, How to Build a Small.....5*..252
Boat, "Lock" for a Small.....2*..270
Boys' and Girls' Columns:—*Doctor's Talks.*—How Fireworks are Made—What is Gunpowder?—What Makes the Rocket Go Up?—The Roman Candle. Our Puzzle Box. A Dish of Fruit. The Doctor's Correspondence. The Cannon as Seen in Times of Peace.....7*..290-292
Celery, How to Plant.....287
Clam-Bake, A Farmer's.....*..265
Clover in Georgia.....275
Commercial Matters.....298
Commissioner of Agriculture, A New.....273
Corn, Notes on Culture.....275
Crop, The Maximum.....273
Dairy Reforms Needed.....276
"Doctoring" Farm Animals.....278
Dogs, Some of the Leading of 1881.....14*..277
End Board of a Cart, Fastening to the.....*..269
Ensilage—Its "Outs".....279
Farmers' Consciences.....279
Farming Prospects, N. Y. State.....298
Fence Stakes, Convenient Aid in Wiring.....*..269
Fertility of Pastures, Maintaining the.....269
"Firing," in Treatment of Horses.....271
Grape Vine, The, in Summer.....286
Grass, Hungarian, and its Relatives.....278
Hay, Loading.....281
Helps, Garden—Sticks and Strings.....287
Hints and Helps for Farmers.....4*..270
Hints, Hot Weather.....279
Horse, Fixture for a Kicking.....*..278
Horse, Keeping One—Second Prize Essay....3*..280-281
Horticulture in New York.....286
Household:—An "Annex" to a Coffee Mill. A Hammock for the Baby. Home Topics. A Door Fender for Children. Household Notes and Queries. A Cream Warmer.....6*..288-289
Humbugs, Sundry.....272
Insect Powder.....270
"Iroquois," the Winner of the Derby.....274
Jack, The King Wagon.....*..275
Jerseys, American, Recent Sales.....300
Latch, A Double Gate.....*..275
Lawn Mowers, With and Without Collectors.....*..268
Leaf Hopper, The Grape Vine "Thrips".....*..286
Locust, The Rocky Mountain, alias Western Grasshopper.....6*..283-284
London Purple—Paris Green.....274
Lucerne, or Alfalfa, in Indiana.....271
Meadows, Top-dressing.....283
North Carolina, Good for.....274
Notes on Orchard and Garden Work.....267-268
Pastures, Maintaining the Fertility of.....269
Phloxes—The Chickweed Phlox.....*..285
Perennials, Herbaceous from Seed.....287
Plasters, Land.....270
Plow for Corn.....*..270
Pigs, What Breed of to Raise.....275
Prices in 1880 and 1881.....299
Protector, A Hand.....*..283
Pruning Trees.....300
Reins for Three Horses Abreast.....*..279
Roses, "Hybrid Perpetual".....287
Scales, Pocket.....300
Slide, A Movable, to a Work Bench.....*..283
Solomon's Seal, The Japanese.....*..285
Stock, Quickly Maturing Live.....282
Stool, Improving a Milk.....272
Suggestions of and for the Season.....266
Thistles, Canada.....282
Tim Bunker—Tobacco, Hookertown Views on Raising.....268
"Trichine Tester," The New.....2*..273
Wind Engines, The Halladay.....*..274
Worm, The Army.....283
Worm, The Bronzy Cut.....267

☞ See Special Announcement on p. 299.

AMERICAN AGRICULTURIST.

NEW YORK, JULY, 1881.

Suggestions of and for the Season.

Work with the Crops.

The cultivator should be kept at work in the corn-field, both to kill the weeds and mellow the soil. The full returns for work done with the cultivator are not all obtained in the harvest of a single crop, but the good effects of the tillage are felt in succeeding years. Some farmers stop the cultivator so soon as the horse can catch the leaves of the corn; it is better to put on a muzzle, and continue the work, thus keeping down the weeds, and leaving the ground in better condition for the crops that are to follow.

The work of harvesting wheat, oats, and barley, will come this month, and it should be begun as early as possible; any delay is a source of loss in a number of ways. If allowed to get "dead ripe," the grain is not so good and plump, and sells for less, because it does not make so good flour, the straw is less digestible than when cut just as the grain has passed out of the "milk." There is less waste from shelling of the grain, and besides the hurry which comes from waiting, until all the work comes in a bunch, is avoided. Have everything in the way of hired help and machinery ready to go into the harvest field on time; delays are dangerous.

Late haying will be done this month, and much that is to be gathered will be of a secondary quality from the neglect to cut it earlier. A field of ripened and brown grass is a sad evidence of neglect, if not of downright thoughtlessness and folly; and the farmer who delays making his hay when it is at its best,—when the grass is in flower—must suffer a loss in having poor fodder for his stock. Late cut hay may—and should be—very largely cured in the cock, instead of parching it in the hot sun. The heating and sweating that it will undergo with this management, will improve it, and make it easier to handle. Hay caps, as mentioned in last month's Notes, are very valuable, often saving their cost during a single storm.

Hungarian Grass, or Golden Millet, may be sown this month for hay, (see page 278). Millet that was sown in the spring should be cut before it gets much beyond heading. If allowed to stand longer it decreases in value, and the beards will become a source of annoyance to the stock, especially to horses. Repeated sowings of fodder corn may be made for a continuous supply of green feed, until the close of the growing season. The small, quick-growing varieties are preferable. A quantity of green fodder at hand when the pastures get dry, as they very often do in the latter part of the summer, will keep the cows up to a full flow of milk, and will be good food for other farm animals.

Swedish Turnips, can be sown up to the middle of this month. The ground from which early potatoes have been taken, is excellent for a late crop of this kind. The seed should be sown in drills 30 inches apart; allow about 3 lbs. of good seed per acre.

As soon as the hay is removed from the meadow a good top dressing, of finely divided, well-rotted manure, may be applied with excellent results. It will produce a thick bottom, thus preventing the sun from burning up the roots, and also give a good second growth, for cutting or for pasturage. For a late crop, or one to occupy a piece of newly cleared land, there is nothing better than Buckwheat, which may be sown during the month of July. The amount of seed to be sown is from three to four pecks to the acre. If sown much later than the middle of the present month, the frosts are apt to come before the grain is matured.

When root crops are introduced into the rotation, there is no need of the summer fallow to clear the ground of weeds and make it deep and mellow. These good results are obtained with the culture and growth of root crops, and at the same time there is no loss of the use of the land for a year.

Care of Live Stock.

Horses are hard-worked, and need the best of care during the hot days of summer. Frequent brushing, rubbing, and currying will be necessary to remove the sweat stains, and make the coat smooth. An occasional washing, especially of the legs and feet, is important. Flies will cause great inconvenience, and if not guarded against, will worry the animals greatly. A cotton sheet is a great protection, and costs but little. Horses should have water frequently, but in small quantities, and should not be allowed to go thirsty so long as to overload themselves when they finally come to drink. The feed should be substantial—something more than grass is demanded by a working horse, especially if its time for eating is limited, as is often the case during this month. The stables, and all the surroundings of the horse, should be kept clean; a failure here may develop bad gases that may breed disease.

Cows that are in milk should be watched and given extra feed so soon as signs of a falling off are seen. It is very difficult to increase the flow after a shrinkage occurs. So soon as the pasture begins to get short, supplement the feed of the field by a ration of green fodder in the yard or stall. Many cows suffer from the excessive heat, being exposed the whole day through to the hot sun in a treeless and shadeless pasture. A pasture should afford a comfortable place, as well as furnish food for the animals, that the greatest profit may be obtained.

Store Sheep will not need much more feed than a good pasture will afford. Give them salt at frequent intervals, and see that they have shade through the hot days of midsummer and a free access to pure water. Sheep for the butcher should be fed liberally with meal. A quart of ground feed per day will, with good pasturage, bring the animals into good marketable condition.

Pigs profit by a good run in clover, or fresh grass. They are naturally clean animals, and only become "pigs" when they have mire and mud holes for a run. Young pigs that are designed for the early winter market should be pushed now by extra feed. A rapid growth at this time will make much difference in the profit of keeping pigs. Pig pork is the best, and young pigs of an early maturing breed should, therefore, be fattened from the start. Sour milk is not enough for them; add grain feed in liberal quantities.

Chickens hatched this month will be large enough to go through the coming winter with safety. Hens set after July do not always succeed with their broods. The hot

weather favors the growth of vermin, and strict cleanliness must be observed about the poultry house. It is an advantage to have all the hen turkeys come off with their young at nearly the same time, that they may all go as one flock, thus lessening the care of looking after them, especially if they are given the whole range of the farm. After the broods are large enough to roam, feed them enough to make them care for their home, and they will return to it at night.

Notes on Orchard and Garden Work.

No people need recreation more than the farmer and gardener, and none take less. They need to go away from their work for a double reason; to find the rest that comes from change, and get new ideas in regard to their own work. Pleasure and instruction can be combined in a trip of a few days, during the comparative "let up" of the work of this month, and visits devoted to the grounds of other orchardists and gardeners. Nothing so refreshes one and inspires him to new endeavors as talking with other successful workers in the same field of labor. New ideas come in this way quicker and with more force than in any other. We say, then, to all who can—and most, by proper planning, can—to take a run of a few days among the leading fruit-growers and gardeners, and see what they do, and how they do it; exchange ideas, and return refreshed for the work that by this time will have accumulated to some extent. After rains the weeds will grow vigorously, and the horse-cultivator and hand-hoe will need to be frequently used. Weeds are easily killed if their roots are upturned to the hot sun.

Orchard and Nursery.

Though rather late, thinning of fruit can still be done with profit. It is better to remove the excess, even though the fruit is of some size, as the remaining portion will be of a better quality. Grafts that are growing too vigorously will need to be pinched. Surrounding shoots upon the stock must be kept out of the way, as the grafts are of the most importance. Pruning can be done this month, at times when other work is not pressing. An open head to the tree should be aimed at, that the air and sunlight may readily reach the interior. So soon as the bark of the stock rises readily, and the buds are mature enough, budding may be done. The methods of budding are described at length, with illustrations, in the August *American Agriculturist*, 1877. It is impossible for us to repeat matter like this every year in our Notes, and we refer those who wish to learn with regard to budding to that number, which can be sent post-paid for 15 cents. The nursery rows should be kept clear of weeds. This can largely be done by frequently running the horse-cultivator between the rows. The whiffle-tree should be wound with cloth at its ends, that it may not bark or bruise the young trees. Beds of seedlings must receive hand-weeding, and should be shaded in hot weather, and watered when it is dry. When blight occurs in fruit trees, there is no remedy; the only thing to do, is to cut out the blighted part, or to remove the whole tree, if necessary. Blight is too sudden in its action to be foretold, or precautionary measures taken.

Some Tent-Caterpillars' nests will have escaped early notice, and they should be cleaned out, or the trees will soon be stripped of their foliage by the worms. The Codling-Moth is best captured under bands of heavy paper or cloth tacked about the body of the tree. These bands should be removed once a week, and the worms killed. The wormy windfalls that fall from the trees should either go to the pigs, or the pigs come to them. Slugs of pear and cherry trees are readily destroyed by dusting the leaves and branches with lime from a bag tied on a long pole.

The Fruit Garden.

The care that the grape vines should receive during the hight of the growing season is of so much importance that a separate article is given on page 286, to which the reader is referred for instruction upon vineyard work for the month. If jelly is to be made from the currants they should be picked when well colored and before they are dead ripe. Those for the table should remain on the bushes until fully mature. For market they should be picked a few days earlier, the time depending upon the distance to be shipped. If long shoots push up from the middle of the bush, break them off while young. Keep the interior of the bush open by other thinning, if necessary. The blackberry and raspberry canes that are to bear the fruit next season should be pinched off at six feet for the former, and four feet for the latter. All other shoots, whenever they may appear, should be treated as weeds and cut away while they are still growing. The old canes may be cleared out so soon as the fruit is off. If the strawberries are grown in single rows the mulch may be removed after the fruit is off; fork in well-rotted manure and keep the beds clear of weeds. When the alternate system is followed the "paths" are manured and forked up, and a rich and mellow bed made to receive the runners from the old plants. Pot-layering does well for private gardens. Pots filled with rich earth are sunk in the soil near old plants into which runners are made to strike root. These are afterwards transferred to a new bed, and if done properly a good crop is obtained the next season.

The Kitchen Garden.

There is no time in the whole year, when the rake and hoe are of more importance in the Kitchen Garden, than now. Planting is mainly over for the season, and the weeds are ready to take possession of the ground to the injury of the crops. The Asparagus bed should now appear as a deep mass of green. This is necessary that nourishment may be elaborated for the rapid growth of the tender and much prized shoots for the following spring. The shade of the asparagus "tops" should keep down all small weeds—some larger ones may assert themselves and will need to be pulled before they ripen any seeds. Bush beans, like the "Refugee" may be still planted for late use and pickling. It is well to nip the ends of those Lima vines that run beyond the end of the poles. Early Beets may be sown for a succession of greens, and young roots during the month. Celery is now grown almost entirely by the surface system, putting the plants on a level surface, and bleaching by throwing up the earth in ridges around the plants. See page 287. Quick growing varieties of sweet corn may be still planted for late use and drying. Select a few of the best stalks to furnish seed for next year. Ashes dusted over the cucumber vines will assist in keeping off the "bugs." Pick every day for pickles. The fruit of the egg plants is much better if kept off the ground by a layer of straw, etc. There are usually more "sets" upon the melon vines than will mature, and to improve the quality of the earlier ones remove the late set fruit. Onions are ready to be harvested when a large share of the tops lie down. After the bulbs are thoroughly dried they should be stored thinly in a cool, airy place. If sweet potato vines are allowed to root at the joints, a large part of the nourishment goes into small and worthless joint roots at the expense of the main ones. Move the vines at each hoeing. On the other hand squash vines may be allowed to take root at the joints with advantage. Some sort of a trellis should be used for keeping the tomato vines with their fruit from the ground; brush or even hay is better than nothing.

Flower Garden and Lawn.

The lawn mower will need to be frequently used, and the corners and borders kept trimmed up with the sickle. If large weeds start in the lawn they should be removed, roots and all, before they have made much growth. Give an occasional hoeing and raking to the walks and drives. Bedding plants need much care at this time, as they grow rapidly, and their attractiveness is lost unless kept carefully trimmed. If designs are attempted, they will need especial care or all the fine effect is lost. Stakes must be provided for the Dahlias, Gladioluses, etc.; the least noticeable of poles are the best, firmly driven into the soil. All climbers will need ample means of support, otherwise they will give a very neglected and bad appearance.

Greenhouse and Window Plants.

At this time of the year, most of the greenhouse plants are out of doors, and it is seldom that we see a greenhouse that looks attractive. Much shading must be done, either with having coats of whitewash upon the glass, or by means of muslin hung below. Frequent watering will be required to keep the house cool and the plants from drying up. Fumigations will be necessary to keep down the insect pests that propagate very rapidly upon the plants during the hot weather.

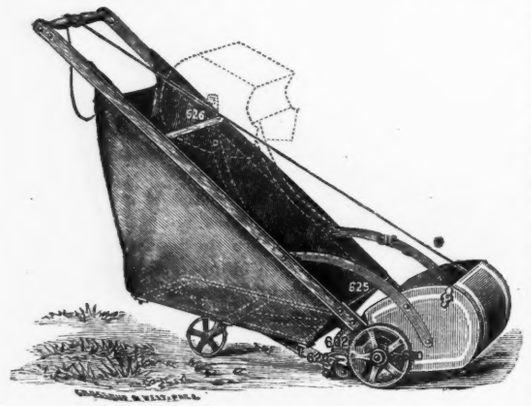
The Bronzy Cut Worm.—The supposed Army Worm, which has done considerable damage in the northern counties of New York by injuring pastures and meadows, is, as we inferred on page 283, not the real Army Worm, but a species of Cut-worm. We find Prof. Riley has identified it, from specimens sent him by Prof. Lintner, and other correspondents, as the larva of the *Nephelodes violans*, a moth somewhat larger than the Army Worm moth, and of a deep reddish-brown color. The worm is striped, and when full grown, of a bronze color. It is called the "Bronzy Cut Worm," and in the spring is not uncommon in meadows in all parts of the country, hiding beneath some shelter during the day, and feeding at night.

The Army Worm never appears so early in the season in the latitude from which it is now reported, or in great or injurious numbers, until wheat is about ripened. Prof. Riley considered it an exceptional irruption of a species normally uninjurious, and does not think it will be heard of as injurious in

other sections, but will, in fact, soon disappear. We might say that the same remedies that apply to the army worm apply to this cut worm. It will be well to burn over the fields in which they occur, so that the new grass will not be infested by subsequent generations. The many who have sent inquiries and specimens will accept this together with the article on p. 283, as sufficient answers.

Lawn Mowers—With and Without Collectors.

The first Lawn Mowers used in this country were English. A few were imported, and being adapted to English requirements, each had an attachment for collecting the grass as it was cut, and removing it from the lawn. When our inventors began to produce Lawn Mowers, they all agreed in giving a machine which cut the grass, but left the clippings scattered where they fell. It was found that in our hot climate, the clippings soon shrivelled and were not visible, while being left, they did good service as a mulch,



A LAWN MOWER WITH A COLLECTOR.

sheltering the roots of the grass from the intense heat of our sun in summer. While as a general rule it is better to leave the clippings as they are cut by the Lawn Mower, this, like all rules, has its exceptions. A lawn may be so closely stocked with grass that there is no room for the clippings, the sward is so dense; or there may be a prolonged season of rains, or of dampness, in which the grass will grow rapidly and must be cut, while, if the cut grass were left upon the ground, instead of shrivelling, would decay. In such cases it would be vastly preferable to collect the grass and remove it from the lawn altogether, than to let it remain. To meet similar requirements, Messrs. Graham, Emlen & Passmore, makers of the celebrated "Philadelphia Lawn Mower," have added to one size of their mowers a Collector, as in the engraving. This is not, as in the English machines, a heavy metal collecting box, but a canvas attachment that will hold all the grass that may be cut, on the average in about 15 minutes, and is so contrived that by pulling a cord the grass may be emptied at once where it may be desired. This Collector is so arranged that it, with its double handles, may be readily removed, and the single handle, used when the grass is not collected, may be at once substituted. We regard this as an important addition to the lawn mower, as it allows the lawn to be treated according to its condition, or the requirements of the season.

Hookertown Views on Raising Tobacco.

MR. EDITOR: I received, a few days back, the following letter from a man up the Valley, who seems to have heard of Hookertown and Seth Twiggs. He wants light on a financial and moral question, and some of your readers may be in the same condition:

Whetstone, Ct., May 5, 1881.

TIMOTHY BUNKER, ESQ.—*Dear Sir:* I have just come to this town, and purchased a farm of about 100 acres, and from 12 to 15 acres of it is said to be as good tobacco land as there is in the Connecticut Valley, and the former owner has raised it for a number of years. The soil is a clay loam, and level. The crops, last year, were oats and grass, both of which were very heavy. About 15 acres lays 15 feet lower than the above, with a brook running through it, and never was plowed, but cuts a good crop of hay, and is mowed with a machine. Both of the above pieces are entirely free from stone. I have also about six acres sloping to the south and east, that is in grass, and is some stony when plowed, but nothing to trouble the plow. On this I have an excellent apple orchard, of about 75 trees, some 15 quince trees, a few cherry trees, grapes, and currants. I have also a pasture, sufficient to keep 8 cows. There is also sufficient wood and timber for the place. The farm cuts about 35 tons of hay. The buildings are good and in good repair. The farm cost me $4,000, and I paid $1,000 down, and mortgaged it for $3,000. I have 7 cows and some young stock, that I have paid for, also 3 hogs, 12 sheep, and a horse.—This is my situation, and now I propose to pay the interest and taxes and get a living without raising tobacco, or lose the $1,000 I have paid. I have just commenced work this spring; came on to the place last January. I have two sons, one 7 years old, the other 17. The youngest is in school, the other always has been until this winter. The farmers here say it is impossible to get along without raising tobacco. I propose to try it and see. There is one other man in town who is going to get into the same boat, situated very much as I am. Now if you can give us any encouragement, or any information, that will be for our interest, it will be very thankfully received.

Yours, respectfully, JOHN U. BUTTS.

I read Mr. Butts' letter to my wife, and asked Sally what she thought on't.

"Think on't," said she, stopping her knitting, and running one of her needles over her ear, "why that man has got a conscience and a level head, both rather rare articles, in the tobacco districts, according to my notion. I have never seen a man or woman that chewed, smoked, or snuffed, that I thought was any better for using the weed—I have seen hundreds that were broken down in health, and came to early graves by the use of it. It often leads to drinking habits, and to drunkenness. The doctors all say it is a poison, even those who use it. The ministers generally have quit using on't, and the women don't like pastoral visits from ministers who are saturated with tobacco, and stain their floors and carpets with the nasty juice. It is a great evil in society, and the man who raises the weed, invests his capital, skill, and labor, in perpetuating this evil. The distillery, brewery, and the tobacco barns, all stand on the same platform, and are doing the same kind of work. I am glad one man has his eyes open."

You are getting radical, wife, I said, and started out, when I met Mr. Spooner at the door, and told him what we were talking about.

Mr. Spooner said, "A good many people are getting light on the use of tobacco, and the folly of turning the fatness of our fields into a vegetable poison, ruinous to body and soul, where wholesome fruits, vegetables and meats might be raised, for the sustenance of the race. I have never been called to attend the funeral of a man who died for want of raising tobaco, to support himself and family. I have attended the funerals of a good many men cut off in early manhood, or middle life, by smoking, and chewing tobacco. Of course their names did not go into the death lists, as killed from this cause. Vital statistics do not tell how many are killed by alcohol, opium, or tobacco, or by the indulgence of any of those fleshly lusts that war against the soul. The grave yard has a bad reputation for truth telling, and all the lying is not done on tomb stones. Too much plainness of speech might disturb the consciences of men who own distilleries, breweries, and grog-shops, and others who turn the fertility of the soil into Plug, Fine-cut, Solace, Cigars, Cigarettes, and Snuff. It is a great evil, and the churches are only just beginning to wake up to their responsibility in perpetuating it." Well, I said, that is the pulpit view of the matter. What have you to say on the financial part of the question? Are the Whetstone folks right, in saying that a farmer cannot make the ends of the year meet, unless he raises tobacco? Will Mr. Butts succeed or fail in eschewing tobacco as a farm crop? "These are fair questions," said Pastor Spooner, "and I think Providence is answering them for us. A few years ago they told us, the planter could not raise cotton profitably without slave labor, but slavery was abolished and the cotton crop was raised more economically by free labor. The largest cotton crop ever grown in the country was raised last year. Fifty years ago they told us, farmers could not gather the hay and grain harvests without intoxicating drinks. Most of our farmers dispensed with them, years ago, as a hinderance rather than a help. In the long run, I do not believe any business pays that works more evil than good to society. I fully believe that 'Love thy neighbor as thyself,' is a sound principle in finance."

There is more sense in what Mr. Spooner says, than tobacco raisers would generally admit, and if they will put these views, where they put their weed, and smoke them, it may lead to wholesome results. Leaving the morals of the question for the clergy and the women to discuss, I have to say for the encouragement of Mr. Butts, and all others that are of like mind:

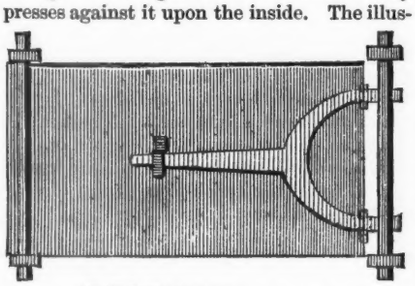
1.—Full three-fourths of the farmers of the country, not only find it possible, but succeed in living, paying for their farms, and getting ahead, without raising tobacco. Failure in farming is much oftener the result of wrong habits than of wrong crops. In a region, where variety farming is the rule, it cannot be possible that a man's success is staked upon the raising of any one crop. Mr. Butts will not be smart at all, if he does not win with any wholesome crop or crops that suit his nearest available market. 2.—In deciding what leading crops he will raise, he should study his markets, local and more distant, and raise what will bring the best returns, in the long run, for his skill and capital. He is close by a depot, and within an hour or two of Springfield, Hartford, and other large manufacturing towns, and within three or four hours of Boston and Providence. If he

does not like the nearer markets which he can reach with his own team, he can send by rail to the large cities. In this case he should study to condense his freights, and he will find an article on that topic in the June *American Agriculturist*, which will furnish food for reflection. Hay may pay a fair profit delivered in the local market at $20 a ton, when it might be a losing business to send it a hundred miles by rail at the same price. 3.—Market gardening is rapidly increasing among farmers, as every census shows, especially in the manufacturing regions of New England, and the older States. This is often coupled with the milk business, and families on the same route are supplied with milk, and vegetables and fruits from the same farm, and often from the same wagon. The location of his farm in a manufacturing region would favor either the milk business or market gardening, or both together. Quinces and currants, he names as among the existing products, and these can be cultivated to almost any extent without overstocking the market. There is a lively demand for them both in the large cities, and in the local markets. 4.—It is generally a safe principle to raise whatever is wanted for home consumption upon the farm, so far as climate favors. The farmer should be a generous consumer of his own products, and should study variety at his table the year round. The age of homespun of course has passed, and his clothing and bedding are better bought than made at home. 5.—The most important item of manufacture will be found to be home-made fertilizers, and to this end stock must be kept, and comfortably sheltered six months in the year. A good barn and barn-cellar are indispensable to the most profitable manufacture of manure. The farm is a machine for making manure, and making money, which is about the same thing. One great drawback to the tobacco crop is that it robs all the rest of the farm for the tobacco field. He may make money possibly, but the machine is smashed. What shall it profit a man if he raise all the tobacco in the world, and lose his farm?

Hookertown, Ct., June 1, 1881. } Yours to command, TIMOTHY BUNKER, Esq.

Fastening to the End Board of a Cart.

Much delay often takes place in releasing and fastening of the tail-board of a cart, owing to the weight of the load that usually presses against it upon the inside. The illustration here given, which prevents this inconvenience very satisfactorily, is taken from the Journal of the Royal Agricultural Society of England. A perpendicular iron bar or pin runs up the right side of the back of the cart, between the top-rail and the bed-rail, so as to receive, above and below, the two clutches of a forked lever, whose long thin arm, acting as a spring, reaches to the center of the tail-board, when, with a slight pressure, it is dropped into a latch fixed there to receive it; the tail-board is thus firmly secured in place. When the load is to be tipped, a mere touch in pressing the spring of the lever lifts it out of the latch, releasing at the same moment the two clutches from their hold upon the pin, and the tail-board comes entirely away .... The wear and tear of ordinary use so fatal generally to contrivances, that appear the most ingenious, when all is fresh and new and oiled and painted, have no impairing effect whatever upon the quick release and handiness of this fastening."—This will doubtless be welcomed by many who know the inconvenience of removing the ordinary end-board when under the pressure of a load.



AN END FASTENING TO A CART.

Maintaining the Fertility of Pastures.

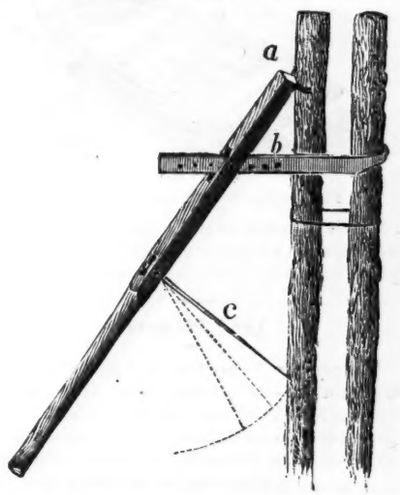
Dr. J. B. Lawes, Rothamsted, Eng., presents a detailed account of his experiments on Permanent Pastures, in the first volume of the "Journal of the American Agricultural Association," from which we gather the following: The complicated nature of pastures, made up, as they generally are, of a number of kinds of grasses, and so-called grasses (clover, etc.), and the difficulties in the way of arriving at a perfect knowledge of them is shown by the following illustration. "A great many years ago, a very remarkable improvement of some pasture land, in one of our northern counties, was obtained by the application of a large dressing of bones. The land had always been employed in the production of cheese, for which this county was celebrated. This success induced others to use bones, and people whose land had been impoverished by the continual sale of hay, could not understand why the bones, in their case, produced no effect, not distinguishing the difference in the character of the soil, its exhaustion due to the sale of cheese, as compared with that caused by the constant removal of hay."

At the close of the detailed statement of the plot experiments, Dr. Lawes says: "The results of these experiments make it somewhat doubtful whether hay can be grown profitably by means of artificial manures applied to permanent pastures. With us hay is generally grown near large towns, and the same conveyance which takes it to market, brings back the manure at little or no cost. Compared with the selling price, hay removes more of the soil constituents from the land than most of our other salable products. One hundred pounds of hay will remove nearly as much nitrogen, and much more mineral matter than 100 pounds of wheat. These considerations must all be studied when the question comes as to the profitable application of expensive manures. While, therefore, the evidence is somewhat against the use of artificial manures when hay is grown for sale, it by no means forbids their employment when grass land is used for the production of meat, milk, butter, or cheese.". . . . . "If land has been impoverished by the sale of hay, and hay is to be sold, dung is the cheapest manure to apply; but if land so impoverished is intended for the future to produce milk, meat, or other animal products, potash is sure to be wanting, and the best manure to apply will be either 200 lbs. of sulphate or muriate of potash, or three times that quantity of kanit salts, and, in addition to whichever of these substances is selected, 200 lbs. of superphosphate of lime, and from 60 to 80 lbs. of nitrate of soda. If, however, the land has been impoverished merely by feeding stock, then the exhaustion will be more likely due to the absense of nitrogen and phosphate, and fertility must be restored by an application of these substances."

"Quality of pasture is dependent upon the food in the soil; in land under grass there is a constant struggle going on between the various plants which constitute what we call a pasture." . . . . . "Having once started a permanent pasture by means of a judicious mixture of artificial manures, the question arises whether it is more economical to keep up the fertility by a fresh application of artificial manures, or by the manure obtained by feeding such stock upon the land with food grown in other localities? It is not easy to decide this point. I am, myself, inclined to think that the latter process is the most economical, and in the conversion of arable into pasture land—upon which operation I have been engaged for the last ten years—I have trusted to the fertilizing properties of the manure from cotton-cake to enable me to accumulate the stock of fertility which, being exhausted by ages of arable culture, had to be replaced before the land could again become a pasture."

A Convenient Aid in Wiring Fence Stakes.

Mr. Elwood C. Tantum, Monmouth Co., N. J., lives in a neighborhood where "worm" fence is largely used, secured by vertical stakes which are held together by wire near their tops. We are indebted to Mr. Tantum for the sketch and description herewith given, of a help to bring the stakes together—or as he calls it, for brevity, "A Stake Drawer."



A STAKE DRAWER USED IN WIRING FENCES.

The stake "Drawer," an engraving of which is here presented, is used for drawing the upper ends of stakes close together. The half-moon shaped iron, *a*, is riveted fast to the top end of the lever, and is to prevent the end of the lever from slipping off the stake when in use. The second iron from the top, *b*, is 25 inches long, with two hooks at the end (one hook will do); this is to catch the stake on the opposite side of the fence. This iron is fastened in the lever by a bolt in a long mortise, in the same way as the hook in an ordinary cant-hook. The iron rod, *c*, has a hole in one end, and is drawn out to a point at the other—this is fastened to the lever by

a bolt in a long mortise and serves to catch in the stake or rail and hold the stakes together, while the man adjusts the iron around the stakes. When the stakes are drawn tightly to the fence, this rod is drawn up until it strikes the stake or one of the rails, when the man can let go of the "Drawer," and it holds itself. The lever is 4 feet and 3 inches long, and 2 inches square, with the corners taken off part of the way down, the lower end being rounded for a handle, as shown in the engraving.

A "Lock" for a Small Boat.

A very ingenious device is sent us by "E. R. N.," Wasco Co., Oregon. He writes: "The 'Lock' for a boat, a sketch of which I send, is very useful, especially where unceremonious 'borrowers' frequent the locality. The 'lock' is made as follows: a piece 5 inches in length by 1½ in width is removed from the bottom of the boat. The edges of this piece should be bevelled so as to fit closely into the bottom of the boat. A strap of iron, with a thumb screw, is placed over the whole, and the 'lock' is complete. All one has to do is to simply remove the piece held in by the thumb screw and take it with him, when there is little or no danger

1.—"LOCK."

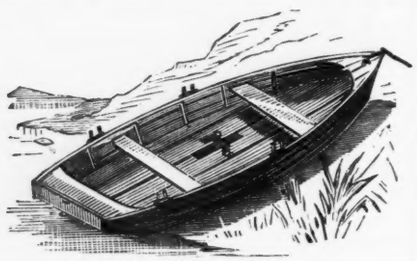


Fig. 2.—BOAT WITH LOCK IN PLACE.

of the boat being used. In fact, it is rendered useless until the piece is again restored to its place, and held there by the thumb screw."

Land Plasters.

The preferred varieties of Land Plaster or Gypsum in our market come either from Central New York, or from Nova Scotia. That from the former locality is grayish, or ash-color, while the Nova Scotia Gypsum is white. Buyers are sometimes led to think that on account of this variation in color, there is an important difference in the composition of the two. Such, however, is not the case, as repeated chemical analyses show. The composition of pure Gypsum is Lime, 32 $^{6}/_{10}$ per cent; Sulphuric Acid, 46 $^{5}/_{10}$ per cent; Water, 20 $^{9}/_{10}$ per cent. The following table gives the percentage of pure Gypsum in a number of samples that have been examined at the N. J. Experimental Station, under the direction of Prof. Geo. H. Cook:

Cayuga Land Plaster, 63 8-100 per cent pure plaster; costs $6 per ton.

Nova Scotia Land Plaster, 92 78-100 per cent pure plaster; costs $7.50 per ton.

French's Selected Land Plaster, 98 75-100 per cent pure plaster; costs $8 per ton.

Onondaga Land Plaster, 73 8-100 per cent pure plaster; costs $6.50 per ton.

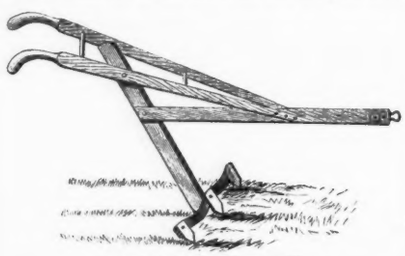
Most Land Plaster contains one or more per cent of "impurities." In the plaster from New York State, it is seen that the per-cent of substances not Gypsum is quite large, but it consists mainly of Carbonate of Lime and Magnesia, and is, therefore, harmless. The following notes are quoted from the N. J. Experimental Sheet for May 5th, 1881:

"Gypsum or plaster was much used as a fertilizer on our best farms many years ago, but its use had fallen off to a great extent, and is now again increasing. The reasons for its use are derived entirely from experience. No satisfactory explanation in regard to the theory of its action has been made. But farmers find it beneficial to sprinkle it on manure and compost heaps in order to fix gases and to rot compost manures, in preparing home-made fertilizers, and in sowing on young clover and potatoes.

Some very suggestive experiments as to the proper season for applying plaster to crops have been made by Prof. Marker at the Experimental Station in Halle, Germany. He sowed the plaster in March and in December, and while the increased crop was very satisfactory in both cases, that following the application in December was from fifteen to fifty per cent greater than that from the one in March." We need such experiments here.

A Plow for Corn.

Messrs. J. C. & A. C. Lorrick, Williamsburg, Blair Co., Pa., write: "We enjoy looking over the different labor-saving machines, etc., illustrated and described in the *American Agriculturist*, and feel it our duty to offer a sketch of a corn plow as used by us, for the first plowing, which we find renders very valuable service. It is made 15 to 18 inches wide, with 3 prongs, or teeth, about 5 to 6 inches long. The two end teeth, or prongs, are secured with strong rivets, while the middle one is bolted to the bar, and also to the "leg" of the plow, it running up above the bar so as to enter the staple in the plow beam. Some of our neighbors have the bar, to which the teeth are fastened, made straight, but we prefer the crooked form, on account of its not dragging clods, stones, etc., so readily as the straight form." The construction of this home-made corn plow is easily seen from the accompanying engraving, which is made from a sketch which was sent us with the description above given. "The cross-bar," Messrs. L. write, "can be made from an old wagon tire;



A CHEAP CORN "PLOW."

one of average breadth and thickness will answer very well. It can be put in shape and the points attached by any blacksmith."

Insect Powder.—Several have written us that the plants from which the "Persian Insect Powder" is made—a species of *Pyrethrum*, have been for some years in cultivation in California. Of this we have been aware, but the present attempt of Prof. Riley to distribute the seeds, now makes it possible for all who wish to do so to cultivate the plant and raise their own insect powder. This, so far as we are aware, is the first attempt to popularize the plant and place it within the reach of all. So far as novelty goes, no claim is made for it; indeed we had the plant in our garden 30 years ago, or more.

Hints and Helps for Farmers.

A CHEAP BAG HOLDER.—G. E. Brindle, Ingham Co., Mich., writes: "I enclose a sketch of a cheap and handy bag-holder,

Fig. 1.—THE HOLDER.

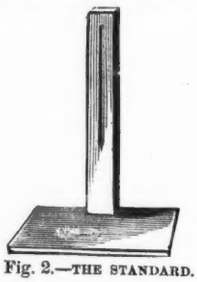


Fig. 2.—THE STANDARD.

which can be quickly constructed. The portion which holds the mouth of the bag is made of a ½-inch iron rod, 1½ foot in length, bent into a half circle. On the back of the circle, weld a piece of iron four inches long, and pass it through the upright or standard. This piece of iron should have a thread cut on it, and be provided with a hand-nut, figure 1. The standard should be 2 by 4-inch stuff, and have a slot so that the rod that holds the bag can be adjusted to different lengths. The standard, figure 2, should be fastened to a piece of plank large enough for a bag to stand upon, when the holder is complete.

HANDY HARNESS CLAMPS.—Mr. Joe D. Croan sends a sketch and description of a har-

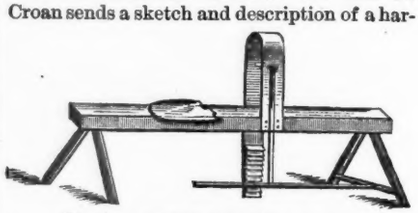


Fig. 3.—A TRESTLE HARNESS CLAMP.

ness clamp, and writes: "take an ordinary trestle 3 by 4 inches, and firmly secure half of a barrel stave to the right side of it, and fasten the other stave or side of the clamp so that it will open and close, by means of a hinge, against the other stave. Dress the top of the staves so that they will join evenly together. Attach a strap near the center of the movable clamp, pass it through a hole in the center of the other, and fasten it to the foot-lever." One end of this foot-lever is screwed to a cross-piece between the forward legs of the trestle, as seen in figure 3. A seat can be provided, the bottom of an old chair, or even a board will answer, nailed upon the trestle. Mr. D. found the notch-piece of an old wagon-brake, and attached it underneath the trestle to hold the lever. A notched stick of hard-wood, or one of wooden pins would answer as well. — Mr. S. T. Nelson, Shelby Co., Ind., writes us of a small harness clamp with a device for holding the clamp open. "The handle of the clamp must be made loose in the mortise, and work freely, but not so as to fall out when

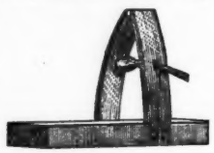


Fig. 4.—A SMALL CLAMP.

not in use. Press down with the hands, and the clamp opens for the work and stands thus until the handle is raised as in figure 4.

The Use of "Firing" in Treating Horses.

BY PROF. A. LIAUTARD, OF THE AM. VETERINARY COLLEGE.

[There are Veterinary Surgeons and "Horse Doctors"; the one as well educated for his profession as the ordinary surgeon, while the other corresponds to the empiric who treats two-legged patients with his nostrums. When the Horse Doctor is called, he feels that he is expected to do something. A proper surgical operation is beyond his skill, and he often resorts to "firing," as that makes a show, as well as a bad smell. It should be understood that by "firing" is meant the direct application of heat, by means of a heated iron, or otherwise, to the living tissues of the animal. As we have inquiries in regard to the operation of Firing, and knowing that the operation is often employed by the regular Veterinary Surgeons, we have requested Prof. Liautard, one of the most eminent of these to give some hints as to the propriety of the operation.—ED].

The operation of "Firing" is one to which Americans often object in the treatment of diseases, and owners of horses very often refuse to have their animals submitted to it. The objections are made both on account of the blemishes which may follow, and for the failures which have often followed the treatment. Marks cannot be avoided, in fact they are a necessary consequence of the operation, if it is properly done, unless the firing is very light. The failures are not necessarily due to the inefficiency of the operation, but more frequently to the incomplete manner of its performance. Of course we would not convey the impression, that all cases will be followed by certain recovery after the application of the actual cautery, but our long experience justifies us in saying, that in the immense majority of cases it has either brought cure, or at least great relief, and we know many cases of lameness, for instance, where all other treatment had failed, in which "Firing" was followed by the most satisfactory results.

"Firing" consists in the proper application to living surfaces, of a high degree of heat, which will irritate or even destroy those surfaces, either superficially or deeply.

According to Prof. Bouley, the cases in which "Firing" may be used are quite numerous. He recommends it in diseases of the joints, when bony deposits are developed on the borders; in injuries of ligaments; in diseases of bones, of tendons, of muscles; and in some nervous affections. Still farther, he advises its use as an auxiliary in pneumonia, pleurisy, etc.

The reader will see from this, that firing is employed with very different objects. Several modes of "Firing" are used: that known as the "*Objective Firing*," is where the caloric is transmitted to the living parts by radiation, and not by direct contact of the heated instrument. It is a dangerous mode of operation, which requires a great deal of care, else it may be followed by ugly wounds, which may leave bad blemishes.

"*Transcurent Firing*" is the one most commonly used, and is performed with special shaped instruments called "irons," or "cauteries." Some are knife shaped, and others pointed. Hence the cauterization in one case is in lines, and in the other in points and dots. The lines are used principally for large surfaces, while the dots or points are used upon limited spaces. These are preferable as they leave fewer marks afterwards.

A third mode of "Firing" has recently been introduced into Veterinary Surgery, known as "*Needle Firing.*"—This is different from the second mode of operation, as the instruments are fine needles, which are introduced while hot, through the skin, and sometimes through the tissues underneath. In cases of large bony growths most advantageous results have been obtained from this method. The operation, when properly applied, requires no other application than that of the red iron; it is, however, customary in America, to join to it blistering. This, however, could be well dispensed with, if the "Firing" was properly done. The following are the unfavorable results which may follow "Firing," and are of so little importance that they will by themselves show how little risk there is in the operation:

1st.—Section of the skin, if the iron is applied too hot and heavily, healing rapidly.

2nd.—Bleeding, when the instrument used is rough and sharp, and pressed too hard on the skin, this is generally harmless, and stopping of itself.

3d.—Tearing of the scabs by carelessness in the attendance after the operation.

4th.—Sloughing off of large pieces of skin, when the "Firing" has been too deep, or when greasy substances are used in connection with the operation.

5th.—Irregular blemishes or cicatrix, results of the above accidents, which it is impossible to remove; and which ought not to take place at the hands of a skillful operator.

Lucerne, or Alfalfa, in Indiana.

BY C. L. INGERSOLL, PROFESSOR OF AGRICULTURE, PURDUE UNIVERSITY, LAFAYETTE, IND.

Lucerne, which has been largely used in Europe as a forage plant, has not attracted the attention which perhaps it deserves, in the central and eastern portions of the United States. On the Pacific slope, and especially in California, where the year is approximately divided into two seasons—the rainy and the dry—great difficulty has been experienced in getting plants for forage that will root deeply enough to stand the long period of drouth and produce growth for the stock. This want has been met in part by Lucerne. There are various portions of the eastern and central United States where periods of drouth are met almost every year, and where it is with great difficulty that the ordinary tame grasses and clovers survive the trying ordeal; and when the newly seeded fields are entirely destroyed. Such a dry period visited some parts of Indiana in 1880, in which the common grasses were largely burned out, and even the Kentucky Blue Grass was completely destroyed in patches in lawns and pastures.

The experimental grounds of Purdue University were laid out in April 1880, and early in May a plat of Lucerne was sown in drills about 8 inches apart. In due time it came up, and made a slow but steady growth until about the end of June, when the plants had attained a hight of 4 to 6 inches. At this time a parasitic plant—the Dodder—was found to be preying upon it and winding its tendril-like stems about the Alfalfa so as to almost choke the life out of it. The unequal contest was watched with interest for several days, when the Dodder seemed to get the better of the Lucerne; the plat was mown close to the ground, the whole product gathered and burned, lest the seeds of the parasite should mature and give trouble in the future. No rain had fallen for nearly four weeks, and the plat was apparently dead. In ten days time, we were surprised to see our Lucerne making a new growth which continued through the season, giving a thick stand of perhaps 10 inches high. The only labor expended, after sowing, was the weeding out of the plat twice, early, while the plants were young and small, as Lucerne is very tender and must be given a good chance until rooted, when it will evidently take care of itself.

This spring, on the first of April, the Lucerne was no farther advanced than half a dozen grasses and other plants in our grounds; but on May 10th the Lucerne measured 24 inches over the whole plat, and was ready to mow. The plants were in blossom May 28th, as the plat was not cut, and at this date (June 3d) it stands fully 32 inches high, and from present appearances we can predict in this latitude (40°), that three good crops of forage may be taken in a single season, or that it will furnish a large amount of pasture. It is said that it is difficult to get a stand of it, if sown with grain crops, as wheat, oats, etc. Nearly every farmer needs and should have a small field adjoining his barns for forage or pasture purpose. Will not some of our farmers who have not given this a trial, do so on a small scale and note the result. With us it promises well, and we hope to be able to give something more definite with regard to it in due time. We firmly believe that there are hundreds of acres of hilly land where grass makes a poor, feeble growth, and is frequently burned out by drouth, where Lucerne would be a very valuable acquisition. Its valuable points, to recapitulate, are:—1st, its manner and quickness of growth; 2d, capacity to endure drouth; 3d, hardiness in winter; and 4th, that it adds one more to the valuable list of our forage plants, and thus enlarges the range of our production.

[We gladly give the foregoing testimony as to the success of Lucerne in a northern locality, and under adverse conditions. One of our friends in Massachusetts gives an equally favorable report, and there seems to be no doubt as to the value of this forage plant when properly treated. In the early experiments with Lucerne it was sown broadcast, and treated like clover. We regard sowing in drills, where it can have proper care until it gets well established, as essential to success. That the roots are sufficiently strong to survive a mowing of the plant close to the ground, when the tops are but six inches high, is an interesting fact, and an important contribution to our knowledge of the plant. Prof. Ingersoll suggests its use as pasture; we would add that experience elsewhere has shown that it is better for the permanence of the plantation to always cut the forage than to allow the animals to run upon it. We would suggest to those who have facilities for irrigation, that if they would learn how much of the most nutritious forage can be raised upon a given area, that they try Lucerne under irrigation. The results, we are quite sure, will astonish them.—EDS.]

Bee Notes for July.

BY L. C. ROOT.

It is all important that everything should be in proper condition for securing surplus honey during the present month. Basswood will begin to blossom about the middle of the month in Central New York and similar localities. We expect our largest yield of best honey from this tree, hence the necessity for abundant storing space, whether box, or extracted honey is to be secured. If box honey is desired, supply each box with a starter of either white comb or comb foundation. The amount of honey which can be secured by using full cards of comb foundation will be found much greater than when only starters of natural comb are used. The very great advantage to be gained by the use of comb foundation, both in the brood chamber and surplus boxes, should be investigated by every bee keeper who reads these Notes.

If the surplus honey is to be taken with the Extractor, a sufficient number of good extra combs must be supplied. These may be added at the sides of the brood nest, or at the top of another story to be added to the hives. Another advantage in the use of comb foundation is seen in case there is not a sufficient number of surplus combs at hand, the frames may be filled with foundation, which will soon be formed into combs and filled with honey. When these are filled the honey may be thrown from them by the Extractor, and the combs be returned to the hives to be refilled. Boxes should be removed promptly when completed, as the appearance of the honey is injured if left upon the hives, where the bees travel over it.

Italian Bees.

I am asked "If the Italian bees are really as much preferable to the Natives as many claim they are." I can truly say that I have never been able to speak more emphatically upon the desirability of the Italian bee than at the present time. The unusual winter and spring through which we have just passed, have been a severe test of the relative merits of the two races. While we could observe no marked superiority in either while they occupied their winter quarters, we could see a difference after they were removed to their summer stands, that was unmistakable. I have been severely criticised since I prepared our new work, "Quinby's New Bee Keeping," for not expressing stronger preference for the Italians. I say to the readers of these Notes, as I did in the book, that each bee-keeper should try them for himself.

This spring the difference has been so marked that the most skeptical would be convinced of the great superiority of the Italian bees.

Extracted Box Honey.

It is asked which it will pay best to produce, extracted or box honey. This will depend much upon the demands of the market. It can best be decided by producing both and testing your market.

Improving a Milk Stool.—"P. C. W.," Essex Co., Va., among various other useful hints, says: "A simple handle to milking or other stools is, to cut an oblong hole in the top, through which you can put the fingers. A person who has never tried this, will be surprised at the improvement it is to any ordinary stool, which is usually very awkward to carry with one hand."

Kerosene Barrels.—"C. G.," Iroquois Co., Ill., asks how to clean kerosene barrels, so that they may be used for syrup. A few years ago we published a request for information from those who had successfully cleansed kerosene barrels, and received a large number of replies, many of which were published. The testimony of the majority was, that long continued soaking in water, either by sinking in a stream or by placing the barrel under a rain-water spout, where the water would be changed at every storm, would do the business. The variations were: first burning out the barrel, by removing one head and placing some shavings in the barrel, which were set on fire, taking care to treat the removed head in the same manner, and then soaking. Another was, first to put a strong ley into the barrel, soak some days with frequent rolling, and then long soaking in water. The testimony was general to the fact that barrels so treated could be used for both cider and vinegar without communicating the taste of oil to these liquids. We do not think that syrup was mentioned in these replies. After all we should hesitate to risk the spoiling of a barrel of syrup by placing it in a barrel that had ever held coal oil.

Sundry Humbugs.

It is interesting and instructive to look back upon our humbug articles of 15 or 20 years ago, and compare the schemes then prominent with those of the present day. In those days, the last of the war and the first of the peace, money matters were in great confusion; at times it took almost three dollars in paper money to buy one dollar in gold, and for a long time there was a difference, greater or less, between the paper and the gold dollar. Those were great times for swindlers, and it was not unusual for us then to mention each month a dozen new names of those offering to sell counterfeit green-backs, or who, as in the slang of the day, were engaged in

Shoving the "Queer."

At first counterfeit money was offered and sold, but the sharpers soon found that it was safer and more profitable to offer counterfeit money for good, get the good money from their victims and send them off with nothing; then followed the period of "saw-dust" swindles. The greenhorn who took the bait, gave up his good money, and received in return a package of saw-dust or other bulky stuff. It took a long time to break up this, but exposures and arrests at length so far reduced the operations that they ceased to be frequent, though they may not have been at any time entirely abandoned. The operators in this line understand human nature, and knowing that

The Offer of Something Very Cheap

will find takers, this form of swindling has been kept along quietly, and during the present year seems to have started with new life. The operators, though few, show great ingenuity and more boldness than formerly. A few years ago their circulars, with much circumspection offered their counterfeits as "national portraits" or "goods," or "cigars," and under other disguises. At present they offer outright "close imitations of green-backs." A recent "confidential circular" at hand offers "One Thousand Dollars" for $150, and larger amounts at cheaper rates. If there were any counterfeit money in these transactions, this business would be a dangerous one. In former years we have shown that this business of dealing in counterfeit money is carried on

Without a Dollar of Counterfeit Money.

The swindlers show great shrewdness. They know that only those accept their propositions who are willing to pass counterfeit bills, and that these, if once in their power, can be acted on by their fears. Their circulars make the condition that the buyer must meet the seller of the counterfeit money in person. The buyer must come to New York, which is the headquarters of this swindle, go to a designated hotel, and stay in his room until he (the seller) comes. The "Private Instructions" are amusing in their cautions, and we wish we had room to give one in detail. They show a great knowledge of human nature. One who starts out for the purpose of buying counterfeit money knows he is in bad business, and the circular works upon his fears. The victim must, on reaching the hotel, go at once to his room and "speak with no one," until swindler comes, who, by showing victim his own letters, will give proof that he is "the right man." The result will be, as it has been in so many cases; the poor fool will give up his good money and get in return a package which he must not open until he is well out of the city, as detectives are everywhere. Indeed he saw a detective down stairs when he came in, and advises victim to hide the parcel in his carpet-bag, and to get out by the private entrance at once. He, the swindler, will show the shortest way to the ferry, and when victim crosses the river, will be safe. The frightened fool is only too glad to get on his way home. When he thinks he is safe, he will open his parcel and find only some old newspapers, or some other worthless matter, in the parcel, for which he has paid good money. These chaps are not fools enough to be at the trouble of making counterfeit money, as they can carry on their trade without it. Still there are, each year, hundreds of such victims caught by this swindle. We do not suppose that many such read the *American Agriculturist*, but our readers may know of those who, in their poverty, are tempted by these offers, and we show them the facts in the case that they may give proper warning to any thus tempted....With the general revival of business, we must expect all sorts of swindling schemes to be proposed. We have before us one from a Western city, which looks much like a proposed

Fraud Upon Farmers.

It is a lithographed confidential letter, representing to the party addressed, that there is to be a great demand for farms by people in Europe, and suggests that he shall go among his neighbors, and get them to sign contracts to sell their farms at low prices. The whole thing seems roundabout and complicated, and while it may be all right, it looks suspicious. We advise farmers, as a rule, to sign no contract whatever out of the usual way, and especially none to sell their home at a future time, at any price whatever. If there is to be an advance in property, they should have the advantage of it, provided they wish to sell. It is safe to avoid all unusual ways of doing business. If one wishes to buy your farm at a given price, sell, if you wish to do so, but do not contract to sell at the end of six months or a year at any price....In looking over some documents we recently came across "The Columbian Calendar, or Almanac, for 1806." This contains a burlesque advertisement intended to ridicule the manner of advertising

The Patent Medicines of the Day,

and shows that such medicines were quite as much open to ridicule then as now, and that the certificates of cures were quite as absurd as at the present day. The medicine is called "Ramrod's Essential Tincture of Gridiron, otherwise Nature's Grand Restorative," and is set forth in a manner which is so like the advertisements we see at present, that the coincidence is remarkable. We are told that Dr. Ramrod has discovered that gridirons "contain a subtile invigorating fluid sympathetically allied to the magnetic fluid of the human body." Indeed the whole seems like a paraphrase of a thing of the present, and the certificates of cures are very much like those offered now....Among Medical Humbugs, perhaps the most successful at present are those that take the patient into the confidence of the advertising "Doctor," and offer

A Recipe Free of Cost.

The Inman fellow, being perhaps the oldest, may be taken as the type of these frauds. All over the country, even in respectable papers, it is advertised that those suffering from "nervous debility," etc., can get a "recipe free" by sending to him. Those who apply get a pretended "recipe," which, as we have shown, is a jargon of absolute nonsense. It calls for articles that have no real existence, and are not to be bought. The recipe states, that as the things may not be procured at the drug shops in good quality, the stuff will be furnished by Inman's agent at a round price. A similar dodge is played by those who advertise "Dr. Churchill's" prescriptions. The circular sets forth the horrors of "seminal weakness." Relief is, of course, to be found in "Dr. Churchill's Prescription." The patient is taken into confidence,

he is here given a prescription, this time containing articles that are generally kept by druggists, but it is when

The Mode of Preparation

is given that the joke is apparent. With an appearance of seriously giving real directions for the preparation of the prescription, after one has procured the ingredients, he is told to do things as absurd as anything we have seen in print. Did we tell one to "boil down an ounce of tallow, wash some molasses in a proper vessel, heat the ingredients to southwest by the barometer, pulverize in a mortar and make into powders," it would be no more nonsensical than the directions given. To one who has no knowledge of such matters the directions for preparing the prescription may seem all right, but they are really as absurd as those we have supposed. The directions for making pills are still more ridiculous than those for the powders. These recipes, we are told, will cure any case,

"When Used and Prepared as Directed,"

a safe assertion, as no apothecary who ever lived could prepare them "as directed." But the key to the whole follows: We are told that a druggist or chemist, who is a graduate in Pharmacy, can prepare the stuff if they have the "necessary apparatus." This looks very fair and very learned, but is not true. Then we are told that Druggists "generally substitute different medicines," which is a libel upon a body of most conscientious men. Or, that they do not prepare properly—all of which is a preface to the "nub" of the story. All this "folderol" about methods of preparing, all this maligning of druggists, when put into plain English means just this: All the knowledge of the world centers in us—we are the Original Jacobs. We only can prepare these things properly—we have the true apparatus. Send your money to us and get the real stuff, and live. Very funny is the description of the individual drugs used in these remarkable prescriptions. For example, we are told that *Hydrastis* has "a pleasant taste." But few persons, living in the Western States, at least, do not know *Hydrastis* as "Golden-seal," and as of all bitters, the bitterest—"pleasant taste" indeed! But the whole of it is a tissue of stupid nonsense.... Those who have kept the run of the literature of quackery, and it has been our painful duty to do this these 40 years or more, have seen the "Indian Doctor" at his prime, and have observed his gradual displacement by a new comer.

"Old Mother"—Somebody.

It makes little difference who—so that she is an "old Mother." The intelligent, the educated physicians, who have given their lives to the study of medicine, are assumed to know nothing, while the unwashed savage, or the unlettered old woman are assumed to have wonderful medical skill. It is a sad comment upon the intelligence of the community that these things are believed—but it is so, and this belief is the foundation of a large share of the quackery of the day. The "Big Injun" has had his day, and the "Old Mothers" are now having theirs, but they are on the wane. "Old Mother Noble," in full bloom a few years ago, declined after we showed what his medicines were made of, but still he survives, as an illustrated City paper, that should have been in better business, recently gave his portrait, diamonds included. But this will not avail—"Old Mother Noble" has had his day, for he is a small personage by the side of

"Old Mother Siegel,"

whose story is told in a large pamphlet. It reads not unlike a story we have seen before, and we advise the "7 Barks" man to look out, as some one is stealing his thunder. "Seven Barks" chap went to Germany to see old doctor something. Some other chap goes to Germany to see "Old Mother Siegel," and his story is a funny one. He admits that he practised medicine in New York for 20 years, and states that he found his German patients knew more than he did—which is not unlikely. These Germans brought from home some stuff that would cure "impurity of the blood," and that was just what was the matter, and just what this fellow couldn't do—not he. "Old Mother Siegel's Curative Syrup" was the stuff that did for the blood, and for old Mother Siegel did he go and cross the salt sea, all for to see her. The story is lovely, but we can not dilate—though this doctor's patients, no doubt, died both early and late. He got old Mammy's story. In brief, she was much out o'sorts, not to say sick—she went and ate some leaves, which others said were 'pizen.' Being 'pizened,' she waited to die, but didn't, all because the poison cured her. The rest of the story is, in brief: poison leaves — syrup — Old Mother—ass of a "doctor" from America came home—and the syrup is now made here by———, but as we are not advertising it, we refer to the circular. We are willing, however, to say that it proposes to cure

"The Strange and Peculiar Disease"

of this country. It is well to know that we have but one disease, even if it is "strange and peculiar." From the symptoms given we should say that it was "Spring Fever," or may be laziness. The unpleasant thing about this "Old Mother Siegel's" stuff is, that it is in this country called the "Shaker Extract of Roots." That the Shakers, whose name has always been a synonym for honesty and fair dealing, should have their good name attached to a miserable quack medicine, is to be regretted. Non-resistance is one of their principles, and we suppose they will submit to the injury of having their good name misapplied, rather than prosecute for libel those who have thus misused it.

A New Commissioner of Agriculture.

Hon. Geo. B. Loring, formerly member of Congress from Massachusetts, will take the place of Gen. W. G. Le Duc, as Commissioner of Agriculture, on July 1st. Having carefully watched the operations of the Bureau of Agriculture since its first origin, we can but have our own views as to the sphere and capabilities of that Department, So far as Mr. Loring may accord with these views, in opinion and future action, this Journal will most cheerfully give him full support and co-operation. The Department of Agriculture we fully believe may, if rightly directed, accomplish a great work in developing and promoting the agricultural interests of our country. To this end it should, like the Smithsonian Institution, the United States Fish Commission, etc., be entirely disconnected with politics. It should call into its service a large working force of the best scientific and practical talent of the country.

The Maximum Crop.—There is a point in the increase of crops, beyond which it does not pay to carry it. The extra bushel, or five bushels, of wheat, for example, costs more in time, attention, manure applied, etc., than the increased yield is worth. It is a great satisfaction to have the largest crop of grain grown in the neighborhood, but it may take away what would have been a profit in an ordinary yield. It is for the farmer to do all he can to reach the maximum crop,—that is, the amount which is the most profitable; but once attained, it does not pay to put in any increase of manure or other fertilizer. The average farmer in this country does not run much danger in farming too highly, but there is, nevertheless, such a thing as overdoing, even in growing a crop of grain.

The New "Trichine Tester."

Since the preliminary description of this interesting and valuable new instrument, on page 235, an important improvement has been added—the transverse movement of the lens, and we now have the completed form, of which an engraving is herewith presented. The larger figure (1) is of the exact size of the instrument itself. The frame consists of two strong nickel-plated brass pieces, *f*, *f*, fig. 1, with long openings, *j*, through them, and hinged at one end, *h*. Two strong pieces of plate glass, *g*, *g*, cover the entire inner surfaces of the frame, including the openings. Closing the frame brings these plates together. The screw-rod, hinged below, is brought into the slot of the upper frame piece, and by turning the thumb-screw, *s*, the glass plates are brought as firmly and closely together as may be desired. Any bit of flesh, indeed of any substance to be examined, placed any where between the plates, as at *t*, is thus reduced to a mere film, if desired.—A carrier-plate, *c*, with its ends fitting into grooves along the edges of the upper frame, is readily moved from end to end of the instrument, or slid out and off at the end, if the lens is desired for separate use otherwise. Another carrier, *m*, turning on a pivot, can be moved to the right or left. The eye-piece, *e*, carrying a strong lens, fits into *m*, with an adjusting screw, so that the focus can be readily obtained for any eye, or any object, thick or thin.—— Figure 2 shows the instrument in use. It is held up to the eye, and turned to a weaker or stronger light, as needed by the particular specimen under examination. The double motion of the carrier, *c* and *m*, enables one to bring the lens successively over every point of the glass plates exposed through the openings, amounting to nearly two square inches. This Instrument is a remarkably simple arrangement of several features of a microscope—stage, holder, movable and adjustable lens, etc.—By its use, any flesh of swine, fish, poultry, etc., can be tested in less than a minute for trichines, and other causes affecting its healthfulness. At the same time the instrument supplies the place of a first-rate Simple Microscope, and has several features of the simple forms of a Compound Microscope. *In fact, aside from its important use as a Trichine Tester, it is a most convenient and useful Microscope, at a remarkably low price.* (See page 299.)—Full directions for using it will be sent with each instrument.

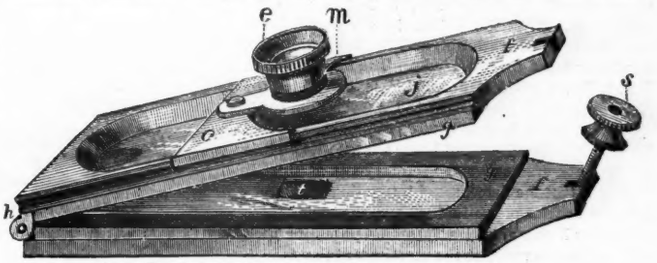


Fig. 1.—THE TRICHINE TESTER (FULL SIZE.)

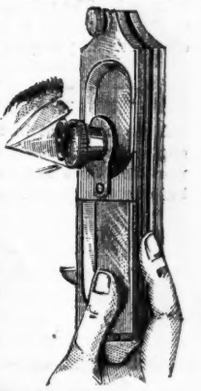


Fig. 2.—TESTER IN USE.

The American Agricultural Association—Its Journal.

This Association is the third attempt that has been made to unite the agriculturists of this extended country into a working body. How far it may succeed in doing this, it is too soon to conjecture. That the object is a commendable one, there can be no doubt, and the beginning has our best wishes for its success. The appearance of Vol. 1, No. 1, of its "Journal," is calculated to awaken renewed interest in the Association, for it compares most favorably with any publication of its kind, whether issued at home or abroad, and it is much to the credit of the Secretary and Editor, J. H. Reall, that he has brought together and published, in such a presentable shape, the varied mass of matter it contains. Its 260 ample pages are filled with addresses made at the meetings of the Association, and papers prepared especially for this issue. The subjects cover a wide range, and several of the articles are of permanent value. Besides the papers from those eminent in the agriculture of our own country, are articles by Prof. J. P. Sheldon, and Doctor J. B. Lawes, of England. The first named gives an interesting account of the relations of land-holding to agriculture in the old country, while Dr. Lawes, who may be regarded not only as the great benefactor of the agriculture of England, but of that of the world, discusses the means of "Increasing the Fertility of Pastures." With us we apply the term pasture, to grass land from which the crop is fed off by grazing animals. Permanent meadow-lands is our term for what Mr. Lawes has in view as "pastures." There is nothing relating to our agriculture of greater importance than the improvement of our grass lands, and this article, of which a brief abstract is given elsewhere, should be useful to every intelligent farmer. We learn that the Association have in contemplation a National Exhibition of all farm products, animals, machinery, etc., at some central point, in 1882, of which we shall no doubt be duly informed. The volume is sent free to all members of the Association, and may be purchased at this office, or sent post-paid by mail for 75c.

Wind Engines—The Halladay.

A correspondent in Brazil wishes to get a wind engine: his letter sets forth the different kinds of work he wishes to do, of which pumping water is but one, though an important item. He also gives

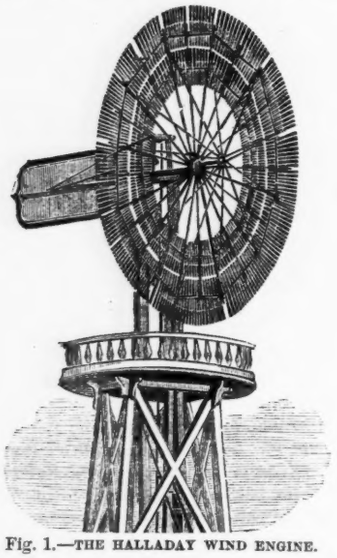


Fig. 1.—THE HALLADAY WIND ENGINE.

several conditions which the machine should meet. With a view to aid our correspondent in procuring a wind engine (as the machines are now generally called in preference to "wind mills,") we consulted our file of catalogues. We may say, in passing, that in looking over these catalogues we were struck with the wonderful amount of mechanical skill displayed in the various devices, and the tact manifested by the makers, each presenting the peculiarities of his engine in the most effective manner. From the catalogues it appeared that the Halladay Mill, made by the U. S. Wind Engine and Pump Co., Batavia Ill., would meet the conditions given by our Brazilian friend, and we here give an engraving to show the general structure and appearance of the mill as set up for work, only a part of the tower being given. For its structure we

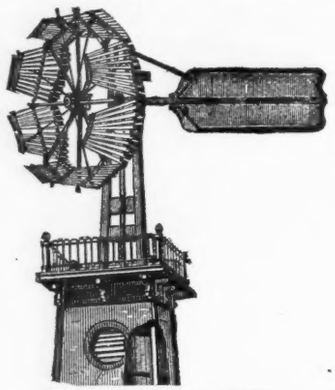


Fig. 2.—THE MILL AT REST.

refer to the catalogues of the Company, in which every part is made plain by showing every detail and its use and action. The engine is a self-regulating one, and its structure is such that the stronger the wind, the less surface presented to its force; the vanes being self-adjusting and keeping the speed uniform, whether the wind be light or heavy. When it is desired to stop the wheel altogether, the vanes are readily put in the position shown in figure 2, in which they present their ends to the wind and afford no surface for it to act upon. Those who have passed through the western prairies know how largely wind is made to pump water, and do other work of the farm. Numerous as are the windmills already in use, we have hardly begun to utilize the immense power that is constantly "running to waste." One in travelling among the market gardens in France, sees, as an essential feature, some provision for watering the crops, and we have no doubt that our own gardeners will find it profitable to adopt some easy methods of irrigation; in this the wind engine will play an important part. Already some small towns and villages at the West are supplied with water raised by means of the Halladay Wind Engine. Aside from the great comfort and convenience of a constant supply of water, its importance in case of fire cannot be over-estimated, and in some places, especially where the buildings are mainly of wood, it will pay to provide water solely for the purpose of extinguishing fires by placing reservoirs in proper locations, to be kept filled by wind engines like the Halladay.

London Purple—Paris Green.—We are often asked, which of these poisons we prefer for killing Potato Beetles and otner insects. That either, properly applied, will be equally fatal to the insects we do not doubt. The "Green" poison is one which has to be made directly from some compound of Arsenic and another of Copper. The "Purple" poison is a "by-product"—that is, one incidentally formed in the manufacture of some of the new dyes. Formerly it was a difficult matter to get rid of it; now that it can be used as an insect poison, it is afforded at a much lower price than a preparation that must be made. These are well known facts. The venders of the "Purple" claim that their poison is so cheap that it would not pay to adulterate it, and that it is always of the same deadly quality. That Paris Green is sold at several prices by the makers, shows that it is not all of the same quality. In purchasing Paris Green it is better to always get the best, as it is easier to mix it with plaster or other inert substance, than to pay the manufacturer for doing it. N.B.—Whichever of these poisons is used, let its storage, mixing and application be intrusted only to those who are aware of its deadly nature. As a matter of safety the farmer should look to this himself.

"Iroquois," the Winner of the Derby.

However greatly opposed upon principle to racing, every American is glad that the first animal in the first race of the world, was an American horse. Wherever he may be, the Englishman is interested in two days in the year, the Queen's birth day, and Derby day; as the wires conveyed to every country the intelligence that the Derby was won by an American horse, there were probably more astonished Englishmen than the world ever saw before. The horse Iroquois belongs to Pierre Lorillard, of New York City, and is described as a bright-brown, sturdy colt, 15¼ hands high; in his make-up he has not that grace and beauty usually met with in high-bred animals, but has all the points that indicate great strength and endurance. Iroquois is out of the mare Maggie B. B., by imported Leamington. He was bred by A. Welch, at Chestnut Hill Farm, near Philadelphia, and was sold to Mr. Lorillard when a yearling for $7,000; he was sent to England with several others of Mr. Lorillard's horses in 1879, and has won several races of less note, and is engaged for nearly all the important ones to come. The great victory by Iroquois was hardly looked for by his owner, who has two other horses of which he had greater expectations. This victory over a dozen or more of the choicest horses in England, adds another to the many illustrations of the axiom that "blood will tell." Leamington was also the sire of Parole, Harold, Sensation, and a number of other noted racers. In June, 1870, we gave engravings from drawings by Forbes of several animals belonging to the Clifton Stud, owned by R. W. Cameron. Among these is a picture of Leamington; we there said of him that he was "regarded as the handsomest model of a race horse in this country, if not in the world." This picture, though not a large one, was regarded as so life-like, that the owner of the horse called to congratulate us upon its excellence. Leamington was sold to Mr. Welch for $15,000. What price could now be had for Iroquois is difficult to conjecture.

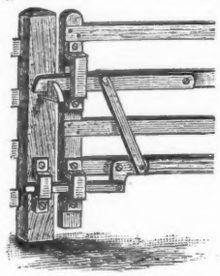
Good for North Carolina.—We like to see one who believes in his own country, and especially in his own portion of that country. "W. A. C.," Wilmington, N. C., sends a newspaper clipping which gives the doings of a remarkable cow, belonging to the Rev. A. L. Slough, Shelby, N. C. The sales of the products from this cow purchased everything with which her owner's table (five persons in the family), was supplied for six months. Then our correspondent adds that his State is the only one that filled every blank in the Census; that it produces more cotton and rice to the acre than any other State; makes more money to the hand and horse; has the finest iron in America; has more gold, and more kinds of hard-wood—but we have not room for it all. We admit that the "Old North State" has much of which her inhabitants have reason to be proud, and are glad to hear of the success of her intelligent farmers.

Size of Tile Drains.—Mr. "C. C. R.," Paulding Co., O., writes: "I wish to tile drain some of my fields. Please be kind enough to tell me the size of tiles to use. The land is flat with a clay subsoil. I can lay the tiles from 20 to 28 inches deep."—We should judge that 2-inch tiles would be the best to use for the laterals, with 3-inch for the first part of the main, and 4-inch for the remainder of the main drain, through which the water of the whole forty acres, or so, is to flow.

"Sprouts" on Apple Trees.—Mrs. "H.," Fairfax Co., Va. Your inquiry apparently refers to those quick growing, long, soft-wooded shoots that start from the interior of the trees and are often called "water sprouts." These can rarely, if ever, be of use, and if they have grown should be removed. If the trees were occasionally looked after, the growth of these could be prevented by removing them when they first start.

A Double Gate Latch.

Mr. "W. W. B.," Frederick Co., Md., sends a sketch of a double gate latch, or rather a latch and bolt combined, which he has found to be an excellent fastening against the hogs. "When the latch is raised it draws the bolt from the staple, and likewise when the latch shuts the sloping hook raises the latch, and draws the bolt back when it drops into the catch, the bolt at the same time going into the staple."



A DOUBLE GATE LATCH.

What Breed of Pigs to Raise?

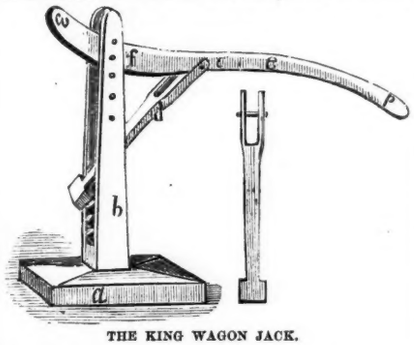
It is impossible to answer the question: "which is the most profitable breed of pigs for a farmer to raise?" Very much depends upon the system of management, nearness to market, individual taste or fancy, etc. But there are some general facts which should be understood in deciding what kind of pig to grow in any particular case. Pig farming may be profitable or a source of loss. A few pigs of almost any breed, can be grown on a dairy farm with profit, but when the number is increased, the piggery may become an expense. It is clearly determined by a long experience that pig pork is the pork that pays. Young hogs marketed when a year old are much more profitable than older ones. This being true—and it is especially so in the older States—a breed should be selected that matures early and fattens quickly. The best pig has the least amount of offal in dressing; is compact in its parts, and its flesh is of the very best quality. Of such are the Essex and Suffolk, and some other allied "small breeds." One can "go further and fare worse" than to select the Essex for the piggery that is to make profitable returns. There is some prejudice against black pigs, but it should be remembered that the color is less than skin deep, and the blackest pig makes as white dressed pork, as any other. There is money in pigs if a good breed is chosen and properly managed. The value of full-blooded pigs over the "grade" is strikingly shown when a pair of the former is taken into a neighborhood where only the "common hog" was before. In a few years the whole country round about has had its swine improved, and its pork interests greatly enhanced. Grow young pigs rapidly and market them as pigs rather than keep them until they are old hogs. Pig pork pays.

Notes upon Corn Culture.

A few years ago there was an impression that corn could not be profitably raised in the older States, but that farmers should give attention to other crops and not try to compete with the West in corn raising. Recently eastern farmers have given more attention to corn culture with a view to lessen the cost of production, and are learning that it does pay. One of these is J. W. Rathbun, Oneida Co., N. Y., who gives his method as follows: "I read with much interest the articles in your valuable paper on Corn Culture, as corn is the only hoed crop I depend on for much profit. I raise from 12 to 15 acres each year, and except thinning out and husking, the labor is all done with horses. I use a one-horse drill, planting two kernels to the foot, with 3½ feet between the rows. As soon as the field is planted, I put on a Thomas Smoothing Harrow, which has three sections and will go over a large field in a short time, and continue to use it every few days as weather will permit, and the ground may require, until the corn is six inches high or higher; the slanting teeth of this harrow do not injure the young corn at all—then I use a horse hoe and cultivator as long as I can drive through the rows. When fit to cut I let one of my men cut a row around the field setting the shocks back so as not to interfere with horses and machine. Then I start a Champion Reaper, raking off each alternate rake into gavels. After it it nicely wilted, tie up and set in large shocks like wheat, binding a large shock of ten or more small bundles firmly, with two or three good bands. The small bundles can be husked without untying, which is quite a saving. With the Thomas Harrow and the Reaper, corn can be cultivated and cut with very little expense.

The "King" Wagon Jack.

"A very useful and convenient wagon jack," writes L. K. King, Tioga Co., Pa., "can be easily made and at little expense by any one handy with tools. To make the jack, shown in the engraving, provide a bed plank, *a*, 16 inches long, 8 inches wide, and 3 inches thick, bevelled down to 2 inches on the edges. A three-inch mortise is made, 7 inches from one end of this bed plank. The standard, *b*, is 3½ inches square, and is tapered on one side to 2 inches at the top, and is 26 inches long. It is made with a 3-inch tenon, to fit into the mortise in the bed plank. It is cut out 1¼ inch in the center, 20 inches long for the lever and latch, and five ⅝-inch holes are bored through, the first two inches from the top, and the rest 1½ inch apart. Five notches are made in the bevelled side for the latch to catch into. The lever, *e*, is 1⅛ by 3 inches where the pin goes through; the power arm, *f*, *p*, is 26 inches, or the same length as the standard, the weight arm, *f*, *w*, being 5 inches long. A catch, *d*, 1¼ inch thick and 18 inches long, is fastened to the lever at *c*, 8 inches from the fulcrum pin. The other end drops into notches cut part way across the sides of the standard. All parts of the "jack" are made of oak, ash, or elm, except the bed-plank, which may be of pine. When not in use, the lever drops down, thus occupying very little room. I have had a "jack" of this kind in use for the past ten years without repairs, and it is so satisfactory that many of my neighbors have adopted it, instead of paying from 3 to 5 dollars for a patented one. It is simple and can be quickly adjusted."



THE KING WAGON JACK.

The Ailanthus in Towns and Cities.

Probably no other tree can live and flourish under such adverse conditions as the Ailanthus. Other trees have to be coaxed and favored while young, but this comes and is bound to stay, and such a trifle as suitable soil, or in fact any soil at all seems to be a matter of indifference to it. We have on two occasions known seeds from the Ailanthus trees near by to find a lodgement upon the granite window caps of the Astor House, and finding there a little dust, the seeds have germinated, and the young trees grown to the hight of two feet or more before they were destroyed. The manner in which the tree flourishes in the streets, where its roots are in earth impregnated by street gas, while the pavement presses hard against the bark of the lower part of the trunk is remarkable. These qualities which go so far in making the Ailanthus, above all other trees, the one which will live in city streets, also to some extent make the tree undesirable. Give its seed a foot-hold, and there will be a tree, whether it starts upon a window cap, between the stones of a front yard, or between the underpinning of a building and the pavement, or in a cranny of the wall itself. In going about the city we see trees in these and other equally unfavorable localities. The first year or two, its tuft of foliage was pleasing to the owner or occupant of the house, and as the little tree was apparently making a struggle for life, it seemed cruel to disturb it; a few years later it was as large as one's wrist, or larger, 6 to 10 feet high, and strong enough to resist all ordinary attempts at its removal. This springing up of the Ailanthus in such places occurs in every town where there are seed-bearing trees, and from the ill effects of this that we have noticed in the city, we think it proper to warn property owners against them. In all such cases the tree should be removed while still young. What may be uprooted by the thumb and fingers, if left a few years can only be eradicated by much expense and labor. Those who have never witnessed the force a tree exercises in its increase in diameter, will be astonished at the way in which rocks may be split, heavy stones uplifted, and huge walls thrown out of the perpendicular. All these and other injuries come from allowing chance Ailanthus seedlings to get established, and could we know the damage to property from this cause in New York alone, the figures would be startling. It is no slight task to uproot an Ailanthus as large as one's arm, for every piece of root must be taken out, or it will start anew; still, it should be done whenever the trees have established themselves where they will cause damage, and especially should every young tree be removed from such places as soon as it is observed. The Ailanthus is not the only illustration of the fact that a plant that persists in growing where it is not wanted, is a weed.

Clover in Georgia.—It is a great misfortune to the agriculture of the Southern States that the belief that clover can not be grown in them should be so general, as the facts do not warrant it. In former years we have given examples of successful clover culture in the various Southern States, and

now add that of C. W. Mills, of Floyd Co., Ga., who in answer to an inquiry says: "I have frequently raised from two to three tons of clover hay to the acre, on good, rich river bottom lands, well prepared. I now have a plot with about 20 per cent of Orchard-grass, that I think will make two and a half tons to the acre at the first cutting. It is beautiful to look at."—There seems to be little doubt that on any good wheat land away from the coast, profitable crops of clover may be grown in nearly every southern State, and the ability to raise clover means a vast deal else. On the lighter soils the Cow-pea must take the place of clover, but on all lands where clover will grow, its perennial roots give it a great advantage over any other plant.

Needed Dairy Reforms.

BY THE HON. X. A. WILLARD, LITTLE FALLS, N. Y.

How to promote improvement in the flavor and quality of genuine dairy goods, is a question which is now being pressed upon the attention of dairymen, and which can not be put aside with impunity. Poor butter and poor cheese can no longer be placed upon the markets of the world at a price that will remunerate the producer. They leave no margin to the dairyman—not even a bare subsistence. The extensive introduction of spurious butter and butter adulterations—the substitution of lard for cream in cheese-making, together with other processes for improving "skim-cheese," rendering it mellow and palatable, have made serious inroads upon all the lower grade products of the dairy; they will continue to grow in favor and to be preferred by certain consumers whenever these spurious goods prove to be better or more palatable than the genuine article. Laws have been passed in New York and in other States, regulating the sale of oleomargarine and other spurious dairy products, and it was quite proper that the makers and venders of these goods should be compelled to brand them for what they are. But this will not prevent their manufacture or consumption so long as it shall be proved they are not unwholesome. They will now be placed upon the markets on their merits, and if they are more palatable and show more quality than inferior grades of the genuine products of the dairy, they will be preferred and go into consumption. As an instance of this truth the immense sales of artificial butter in the English markets may be cited, where it is often taken by the consumer at a higher price than genuine butter of second class. It is without doubt unfortunate for the dairy industry of the country that invention has so developed and perfected these substitutes as to make them formidable competitors of genuine dairy products; but dairymen should no longer refuse to accept the situation, nor expect to get relief by ridiculing and denouncing the spurious goods. They must meet the enemy with something more substantial than mere words—they must offer in competition dairy products of the finest flavor and of supreme excellence—products that have some keeping qualities by which buyers, in holding, may have good assurance against loss on account of quick deterioration and decay. In other words, fine fancy butter and cheese have now become of imperative necessity to the dairyman who desires to stand by the integrity of his product, and not be pushed aside and overwhelmed in the wake of spurious goods.

In this march of improvement the dairymen must not look wholly to the manufacturer, nor expect that the work can be accomplished by new discoveries and Utopian processes in the milk vats; for the main work rests with those who produce and deliver the milk to the factories. We have now an army of skilled workers—men who are striving to excel and who spare no efforts to manufacture an unexceptionable article. They manipulate the milk coming to their hands after the best methods. They are quick to see and adopt improvements, and yet they fail to achieve the highest results, because their labors are expended upon bad material. Their patrons often can not be induced to bring them *good sound milk*. In almost every community of dairymen there will be found some who are addicted to shocking practices of uncleanliness; cow-beating, dog-driving, compelling herds to slake thirst in foul waters; adding the milk from sick cows or from gargetty udders. All these things and others of a similar character are from time to time occurring, and one cow's milk often taints a whole vat of good milk. It is this condition of things that causes the cheese-maker trouble, and the more so since he can not always trace the bad milk to its source. It is safe to say that a large share of the "off-flavored" and quick-decaying cheese of America comes from this cause. Of course it is liable to come from careless manufacture, bad rennet, lack of salting, and filth about factories; but in all these cases the cause is easily traced and the remedy readily applied. But the former belong to the class of unknown causes, or causes difficult to be traced and corrected under the present system of management.

Now what is needed is a reformation in the methods of producing and handling milk *at the farm*, and the manner of its delivery at the factory. And the most feasible way for bringing about this most desirable result, it would seem, is to employ Inspectors to visit farms from week to week throughout the season, noting everything in connection with pasturage, water, treatment of stock—the milking, cleanliness of dairy utensils, and the manner in which milk is treated in the can and on its journey to the factory. With such supervision, and with rigid rules for the exclusion of faulty milk, we may hope to get an immediate and permanent improvement in the flavor and quality of our dairy products. The present system of throwing this work upon the factory manager, or requiring him to detect faulty milk as it is delivered at the factory, has been proved to be untrustworthy. The manager has not the time nor opportunity, while receiving milk, to detect every shade of its character; he can only pronounce upon the worst cases, or when decomposition has proceeded so far as to indicate beyond question that the milk is rotten or unsound. He can not trace the causes, or tell all the stages of incipient decomposition which spoils the milk in the vat, but which has not advanced far enough at the time of delivery to warrant its rejection. And again, he can not reject milk without engendering altercations and stirring up bad feeling—often causing the patron to withdraw his support and take his milk to another factory. If the trouble occurs with several influential patrons having large herds, the maker will not go to extremities and endanger his situation, but will prefer to take the milk as it is and do the best that he can with it, and so his product goes into the market as inferior, being classed as "seconds" or "thirds." The manager's talk and remonstrances may in some instances cause a reformation, but in a vast number of cases it amounts to nothing. The Inspector, on the other hand, is entirely independent, or stands as an impartial judge between the maker and the patron. He points out the causes of faulty milk as he finds them at the farm, and the tests of samples at the factory confirm his position. He suggests where improvements can be made, and thus the patron becomes educated and all parties interested in his milk are permanently benefited.

This plan has proved a great success wherever adopted. It has raised second class factories into the first rank, and one season's work of a thorough and competent Inspector has been effectual in revolutionizing the whole system of milk production and delivery over the entire district in charge. The system was early adopted by the late Gail Borden, who was the first to show how milk could be successfully condensed and put upon the market as a commercial product, possessing all the elements of sound, pure, and wholesome food. Near the close of his life, when he had perfected his inventions and brought his condensed milk to the highest standard of excellence, he stated to the writer that he never could have accomplished this grand result had he not inaugurated a system of milk inspection *at the farm*. "My Inspector," he said, "noted every circumstance affecting the flavor and soundness of milk on the farm—health of the cows, their feed, water—regularity in milking, cleanliness of stable, and utensils. My patrons were instructed not to dog or over-heat cows in driving, not to beat or frighten them while milking—to separate animals in heat from the herd, and keep back all milk coming from inflamed or diseased udders. In fine, he instructed my patrons in all the details for producing clean, sound, wholesome milk, and by constantly testing samples of milk at the factory and comparing with the reports of my Inspector, I was soon enabled to get milk that gave me no trouble in condensing, and which was satisfactory to the most fastidious palate." And he remarked that, although he had selected his dairies from those who had been engaged in supplying milk for city consumption, yet he still found it necessary to educate and reform them in many of the details for producing a perfectly sound, clean, and good flavored milk.

There are thousands of factory managers all over the country who would be glad to co-operate in this movement. Let the patrons then of every establishment be called together, and a mutual plan be inaugurated, by which every man's farm and herd shall be inspected from time to time, and every means taken to insure the delivery of clean, sound, wholesome milk. We shall then begin to see a marked improvement in our dairy products, and with competent makers, freedom from filth, and bad odors about the factories, our dairymen may bid defiance to all spurious goods; because genuine butter and cheese of supreme excellence will always find buyers and consumers who are willing to pay a fair price for them in all the dairy markets of the world.

A GROUP OF FIRST PRIZE DOGS.

Some of the Leading Dogs of 1881.

The Fifth Annual Bench Show, held under the auspices of the Westminster Kennel Club, in New York City, at the American Institute, April 26–29, was one of the most successful exhibitions of dogs that has occurred in many years. In the accompanying engravings we introduce to our readers some of the leading dogs brought together at this "Dog Show."

No. 1 is "Dash," the property of Chas. T. Brownell, New Bedford, Mass.; a first prize "Gordon" Scotch Black-and-tan, a handsome variety of the setter family. The name Gordon was given from the belief that these animals, now so much prized, were first bred by the Duke of Gordon.

The first prize, Red Irish Setter, "Chief," No. 2, belongs to Max Wenzel, Hoboken, N. J. His color is of the characteristic mahogany red, nose and eyes brown. The Cocker Spaniel Dog shown at No. 3 is "Brag," the first prize winner. This variety of the spaniel is very hardy, intelligent, and handsome. The dogs of this breed do not point their game, as the setters and pointers, but are taught to hunt close to their masters and to "flush" their game.

No. 4 is "Rush," the first prize winner in the pointer class, and owned by Edmund Orgill, Brooklyn, N. Y. This dog shows great improvement over the old Spanish pointer, and illustrates what constant and careful breeding will do in developing an animal. The Siberian Bloodhound, or Ulm Dog, is shown in No. 5; a tall, strong animal of the mastiff breed, without the broad head, and noble presence of the latter. They are fairly intelligent, and the one illustrated has been taught

many tricks and labor-saving actions.—No. 6 is a portrait of "Mike," a first prize winner among the Irish Water Spaniels. This is a hardy and intelligent variety of the spaniels, used in Ireland as retrievers, and are very courageous.

The "Mayor of Bingley," shown at No. 7, is a well known Newfoundland, which came from Yorkshire, England. "Turco," No. 8, is a fine specimen of the St. Bernard Dog, imported direct from the St. Bernard Pass, among the Alps. A first prize Cocker Spaniel, is shown in "Beatrice," No. 9. "Rattler," No. 10, is a black and white Beagle, a breed used to some extent for hunting the hare. These animals are bred so small as to be carried to the hunting grounds in the pocket of a shooting coat. The Mastiff is a breed of dogs that is intelligent and courageous, without ferocity. Individuals of this breed have attained a hight of 3 feet 9 inches, and a weight of 180 lbs. No. 11 shows "Grim," a very fine specimen of a large Mastiff, owned by C. P. Fraleigh, Brooklyn, N. Y.

A rather uncommon dog is shown at No. 12, the "Berghund;" it is something of the nature of the mastiff. No. 13 is the foxhound, "Coiner," a first prize winner. This dog has his ears cut or "rounded," to avoid having them torn by briers, etc., while hunting. The small crooked-legged dog, No. 14, is the "Dachshund." This breed is not common in America, but is much prized in Germany, as a dog of the highest courage. However undesirable it may be in some respects, farmers and others will keep dogs, and anything that will introduce dogs of greater beauty, intelligence, and service, in place of the miserable curs so often met with, is commendable. As an aid to this end, engravings of some of the leading dogs of the different most popular breeds are here presented.

A Convenient Small Barn.

Mr. Joel A. Simonds, Cook Co., Illinois, has a convenient small barn and carriage house, with stable and privy, which he prefers to any other that he has seen, and sends plans with explanations. "The barn, fig 1, is designed for one carriage, one buggy or wagon, one horse, and one cow. The carriage house

Fig. 1.—FRONT VIEW OF BARN.

is 20 by 24 feet, with 16-foot posts so as to give sufficient room for hay or fodder over head. The stable is 12 by 24 feet, with a lean-to roof which furnishes a place overhead to store bedding. The horse and cow have box stalls in which they move at liberty. The stables have no floors in them, the animals standing on the ground. The stables, if well littered and properly cleaned, furnish a dry, clean, and wholesome place for the animals. The privy is an every day blessing; it is clean, odorless, and healthful. There is no vault under it. The droppings of the privy fall upon the stable litter, and are covered with dry ashes or dry loam, by which they are deodorized, and then removed to the compost heap and covered with stable manure which effectually disposes of them. This work does not occupy more than one or two minutes in connection with the stable duties, and is performed every time the stable is cleaned or the cow is milked. A barn of this description can be built here [Illinois] for $300 or $400, according to the way it is finished."

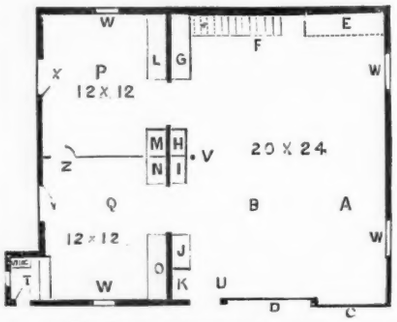


Fig. 2.—GROUND PLAN OF BARN.

EXPLANATION OF FIGURE 2.

A, Place for the carriage; B, place for the buggy or wagon; C, door hung on the outside of the building; D, door hung on the inside of the building; each of these doors slides past the other without interfering with it; E, harness room; F, stairs; G, bin for corn in the ear; H, bin for oats; I, bin for corn meal; J, bin for bran; K, tool corner; L, horse manger, fed from above; M, horse grain box; N, cow grain box; O, cow manger, fed from above; P, horse stable; Q, cow stable. Litter for stables overhead. V, water; T, privy; S, waste box; R, ash box.

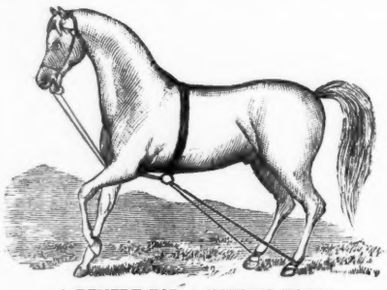
Hungarian Grass and its Relatives.

This season we have an unusual number of inquiries as to Hungarian Grass, Hungarian Millet, Italian Millet, and German Millet, which are different names for forms of the same grass. Besides these, such names as Tennessee Millet, Missouri Millett, etc., given in some localities for the same grass. The only apparent difference between those called Millet and the others is, that they produce larger crops of seed. As a grain crop this—for they may all be regarded as one, and called Hungarian Grass—is hardly worth consideration, but as a forage crop it is often of great value. Being a quick-growing annual, it may be sown to supplement the hay crop when that is found to be short, and it often allows land to be usefully occupied when it might otherwise lie fallow until the time to sow grain. It is not a crop for poor land, its life is very short, and it should be pushed to its full extent, in order to get a heavy crop of succulent fodder, and a large return. A light warm soil, with a dressing of some stimulating fertilizer—the equivalent of 300 lbs. of guano to the acre—will give a heavy crop ready to mow in six or seven weeks after sowing. It may be sown with safety on proper soil, as late as the middle of this month, except, of course, in far northern localities. The land being well prepared, the seed is sown broadcast at the rate of a bushel to the acre; some sow but three pecks, which may do if the land is very rich, but there should be a thick stand in order that the herbage may be fine and tender. After sowing, harrow lightly, or brush in the soil, avoiding too deep covering. This grass should be cut *early*, that is, while in flower, and not only before the seed is ripe, but before it begins to ripen. All the fault that has hitherto been found with Hungarian Grass is due to late cutting; not only does the base of the stalk become hard and the lower leaves poor and trashy, but the small, rough bristles that surround the seeds become very firm and harsh, and are said, no doubt with truth, to have seriously irritated the stomachs of animals that have eaten the hay. As all do not observe with sufficient closeness to determine when the grass is in flower, for that is the proper time at which to cut it, it will be safe to mow as soon as the head is visible on a large share of the plants; a few days too early is far better than a few days too late.

There is nothing about the curing different from other hay; the aim should be to cure it green, in which state it is highly relished by stock of all kinds. Two crops have been taken from the same ground in one season; and one farmer in Tennessee reports that on October 10th, he secured an excellent crop from a sowing made on September 1st. It is not claimed that hay from Hungarian Grass has the nutritive value of that from the perennial grasses, but it makes a most excellent substitute, and the seed can be sown even at this late day and make a most useful hay crop.

A Fixture for a Kicking Horse.

Mr. "H. W. S." New Hanover, Pa., writes: "I will give you my method of treating a kicking horse. Procure a heavy bit and a strong strap; fasten one end of the strap to one ring of the bit and pass it between the front legs until it reaches back of the belly-band. Put on a strong ring, and bring the other end of the strap back again, and fasten it at the other ring of the bit. Another strong strap is fastened, one end to the leg just above the hoof, and then brought through the ring and back again and fastened in the same manner to the other hind leg. The strap



A REMEDY FOR A KICKING HORSE.

should be made tight enough to prevent the horse from being entangled. By this method the horse can be worked without worrying him, except when he wishes to kick."

"Doctoring" Farm Animals.—It is a poor practice to be continually dosing animals. When we see a farmer frequently visiting the drug store for medicines for his stock, the impression is, that there is something radically wrong in his management. He is the "sick one," and needs the aid of a good physician—some one to show him that sickness rarely happens on a well ordered farm; that clean, warm stables, and plenty of good feed, pure water in abundance, etc., are far better than their opposites, with all the physic that the largest drug store can supply. Nothing is more clearly proved than the importance of care and keeping of the right sort for the health of farm animals and

their profitable growth and increase. Sickness will sometimes come with the very best management, and when it does, it is better to employ skilled hands to cure than to "doctor" and "physic," and perhaps kill the valuable animal, yourself, that under proper treatment might have been saved at a trifling expense.

Farmers' Consciences.

BY COL. M. C. WELD.

Is there any more uncomfortable feeling than that one has been cheated, over-reached, defrauded, or humbugged? One ought indeed to feel a good deal more uncomfortable when he is conscious that he has himself been the cheat, over-reacher, or fraud.

Very few of us farmers will plan to defraud any particular person. We know it is dishonest to give short measure, so we lay ourselves out to be exact. The man of a liberal spirit will make sure to give good weight, if he is selling to a near *neighbor*, but how will it be if the article is to be sold in the open market? The measure will not be quite so liberal, for the obvious fact that a barely perceptible shortcoming on each half bushel will yield quite a handsome profit in the aggregate. If that be so—who is cheated? Cheating the great public does not lie with any special weight upon anybody's conscience. We have a sort of feeling that the account is balanced. We do not get, as a rule, so much for any crop as we think it ought to bring, so we shorten our measure a little bit, or we degrade the quality, barely perceptibly, and no doubt do it all with

"A Good Conscience!"

This does not allow a man to cheat his neighbor, though he may be sure of never being found out, but permits one to top off barrels of apples with the fairest and best; another to ship baled hay loaded with firewood, all weighed in; yet another to take a few dippers of cream off the morning's milk, "just for family use," when it is shipped at evening. "A good conscience" argues that there is no harm in it because the goods are sold in the open market and "*caveat emptor*," (look out, buyer!) is good law, in fact, *the* law; for if the "*buyer*" does not "*look out*," it is *his own* fault if he is cheated. So we argue.

Public Inspectors.

The farce of public inspection is another way of quieting unruly consciences, and of inducing "honest" men to cheat a little. I know that in New York, for instance, the people try to protect themselves by having a Board of Health, with an incorruptible scientific man at its head, who, not being a politician, not being a lawyer, and skilled in guile, but being trained to exactness, to chemistry and truth, will stand between the farmers and dealers who water their milk and steal cream, and the babies who are injured by the thin and innutritious stuff.

Our farmer "with a conscience void of offence," argues thus: If the milk is not up to the standard, the inspectors of the Board of Health will throw it out, or pour it out, or pretend to find frogs in it, or something; if they pass it, it must be all right. "My milk is really better than it needs to be—a little cream will not be missed, and if I add a little pure skimmed milk it is much better than adding water, if the adulteration is not detected; thus the pious farmers ease their minds, and when they read of the children that come to their death annually in our great cities, because their food, which is chiefly milk, lacks nutriment, or lacks richness, they say: "Ah! those rascally inspectors, they pass a great deal of poor milk. It is too bad." So it is.

Back in the country somewhere I think I hear a farmer say: "Our milk goes to the creamery, and the agent makes beautiful butter. The skim milk is condensed and it is just as good as Borden's. In fact most people can't tell the difference." Perhaps good Mr. Borden was too conscientious, if condensed skimmed milk and condensed whole milk can not be distinguished. Why should we be so particular? At any rate if there is fraud it is on the agent's soul, not on the farmer's. And yet the agent would have notice to quit, if he did not make his creamery pay as well as the one over the hill, which, being nearer the railroad, can ship skimmed milk to be sold "on the platform." The agent of the far-away creamery cannot sell skimmed milk nor can he condense it very well—so he makes it into skim cheese, and enriches it with beautiful, pure, "butterine," which we all know is made of the very nicest lard!

That was a most happy discovery that lard, either alone or rendered with some other fats, could be made to combine with poor curds so as to replace the butter-fat and make a firm, rich cheese, and yet, though so beneficial in all its bearings, good Deacon Taylor, who sends his milk to this creamery, says he hopes that no lard is put into the cheese that is made from *his* milk, and he is glad that he and his neighbors, though they do not realize quite so much for their milk as if they lived nearer the city, are removed from the temptation of skimming, and adding water.

The Laws of Trade

presuppose a degree of willingness to cheat on the part of the seller, and a necessity for shrewdness on the part of the buyer. So it has been since Solomon's time or before. "'It is naught—it is naught,' said the buyer, and when he had gone then he boasteth."

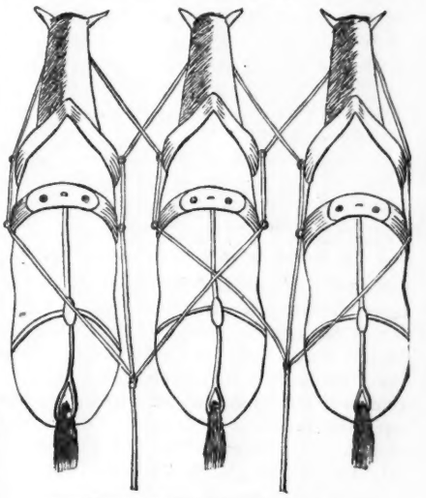
Ensilage—Its "Outs."

"I want to know the *outs* of ensilage," writes a friend in a recent letter. Knowing his way of putting things, we may amplify his pointed request to read thus:

"As in most new things of the kind, those who succeed with their silos are very enthusiastic over the matter; they at first see only the favorable features; whatever drawbacks there may be are overlooked, and without intending it, their accounts are partial. If any have failed altogether, they feel too keenly the ridicule of their 'I told you so' neighbors to publish their failure to a larger circle; hence we hear from only the successful ones. Now what I wish to know is: What are the *dis*advantages of Ensilage? That fodder will keep in a silo so long as it is kept closed, I have no doubt. The keeping is but half the battle—how about the spending? Is there no loss of fodder after the silo is opened? If a loss, how much? The fodder when exposed is said to become intensely sour; what is the effect of continued feeding of corn-fodder with vinegar?" These questions and many more must be answered in time, if present experience does not allow it to be done now. The time is at hand when silos, if built at all this year, must be made ready for the crop. If any have found serious defects in the method, it is as much their duty to give them, as to publish successes. Our own notion is, that in some form Ensilage will be largely followed, at least upon dairy farms. What we now need is some modification of the process that will place its advantages within the reach of the farmer who keeps but few cows, and whose dairy operations are but a part of his general farming. Whoever will give us this modification will be a benefactor to our agriculture.

Reins for Three Horses Abreast.

We have given, in past years, a number of different methods of arranging the reins for



REINS FOR THREE HORSES ABREAST.

driving three horses abreast. Mr. Wm. Toole, Sauk Co., Wis., sends a description of his method, and from his sketch the engraving here given is made. He writes: "Use the common two-horse lines for the outside horses, and snap the branch lines into the bit of the middle horse. A pair of additional branch lines are needed, which should be about six inches longer than the others, with buckles for adjusting their length, and a snap at each end. Run these branch lines through the rings of the middle harness, and snap them into the bits of the outside horses. Cross the other ends over the back of the middle horse and snap them into the buckle of the reins."—The method of arrangement of the reins is clear from the above engraving.

Hot Weather Hints.—To-day, May 12, the temperature has been 100 degrees in the shade with us, and the severe heat has been too great for human comfort. There are some precautions which the present high temperature prompts us to offer to those who are obliged to labor out of doors in the hot sun. Avoid drinking large quantities of cold water; it is better, if possible, to take small draughts at frequent intervals. If some of the cold water is poured upon the wrists, or held upon the temples, or both, the temperature of the body will be rapidly reduced, and with better effect upon the system than if taken internally. A light, white hat is far more comfortable than a black, heavy one, and if it has a wet cloth, or even a fresh cabbage-leaf, placed in the crown, it will be all the more cool and comfortable. A light handkerchief tied loosely about the neck, will protect it from the burning sun. A bath at night is very refreshing, but should not be prolonged.

Keeping One Horse.

[SECOND PRIZE ESSAY. BY T. L. NEVILL, ST. JOHNS, NEWFOUNDLAND.]

To keep a horse, so that he may render the longest continued, and greatest amount of valuable service, it is essential that he should be provided with comfortable quarters.

Several excellent barn-plans have recently appeared in the *American Agriculturist*, to which the reader is referred. An extended

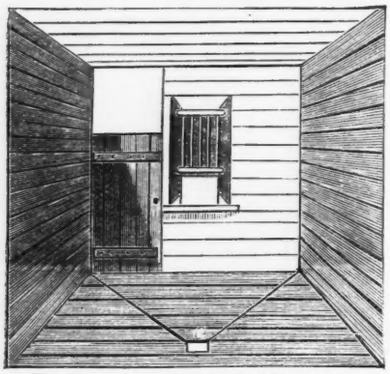


Fig. 1.—INTERIOR VIEW OF LOOSE BOX.

description of one, and its essentials, would leave but little space for other important matters of horse management. The stable must be dry, warm, light, and with good ventilation; the latter to be managed on some plan that will not cause currents of air to pass over the inmate. A loose box is a great comfort to a horse. The name seems to frighten most people. So far from being some complex arrangement, only within reach of the wealthy, it is as simple as possible. A reasonably wide stall may be used as one: but a few inches more width is desirable, depending on the size of the animal. If hard-worked, a horse rests more completely in a loose box than in a stall, and, when idle, he can exercise himself in it sufficiently to prevent stiffness or swelling of the legs. Few stalls permit, and still fewer horses learn to indulge, while tied, in that position essential to complete repose. Probably four horses, stabled in loose boxes, will do the work of five kept in stalls, and therefore a single horse should be one-fifth more efficient. The engravings here given show a very convenient loose box that has been in use for years. It will be noticed that the feed can be supplied from the outside. The door may be put in any convenient position. In the sketch it is, probably, in the worst possible one; but, at the end of a narrow shed as here, no other could be adopted without making the entrance directly from the outside.

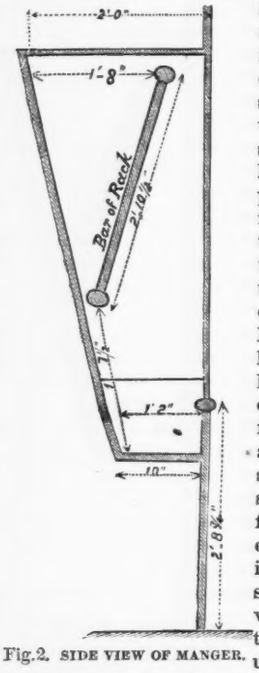


Fig. 2. SIDE VIEW OF MANGER.

Food—Buying and Feeding it.

The *American Agriculturist* is circulated in so many and widely spread districts, each with specialties of its own in its productions, that it is difficult to give specific instructions as to the kinds of food to be used, and the best mode of purchasing; or, if they are given, they will suit but one locality. In most places hay, oats, and Indian corn will be the staples; but corn meal, peas, barley, wheat or rye, or in fact any farinaceous food may be used. Bran, shorts, linseed meal, roots, and oaten fodder are useful for a variety, or in sickness. In summer it is an advantage to be able to use some form of green fodder in place of, or as a substitute for, some portion of the hay. Cut grass, clover, green oats, vetches, lucern, all are useful and of wide spread production.

Market facilities, a man's means, or space for storage, will determine whether or no feed should be purchased in small quantities, from time to time as required, or in large ones sufficient for some months, or even a year's supply. Whatever is used let it be sound and sweet. Do not let a low price tempt to the purchase of an inferior, musty food. Having secured a good article, store it properly. Hay should be packed as closely as possible in the barn. If baled hay is used, a day's supply should be shaken out loosely to recover its bulk before being fed. It is so compressed that, if used directly from the bundle, a ration of proper weight will not distend the bowels sufficiently to give a feeling of satisfied appetite; that is, your horse will apparently want more. Grain should be bright, clean, plump, sweet, and heavy, and it is the better for not being new. New grain has a laxative effect, and the same is true of new hay. Whatever may be the quantities purchased, a rat and mice-proof place of storage is desirable; but if this cannot be secured, the more open the place in which grain is kept the better, as being within the reach of observation and cats. Rats do not like the light of day, nor like cats—particularly cats. Some divisions, or small bins, will be required in which to keep minor articles of feed.

Fig. 3.—GROUND PLAN OF THE STABLE.

A horse of about 800 pounds weight, of average appetite, and working daily, will require, to keep him in condition, 14 pounds of grain, and 12 to 14 pounds of hay per diem; or, if stabled all the year round, 170 bushels of oats (30 pounds per bushel), and 2½ tons of hay per annum, or their equivalents in other articles of food. These are sufficient quantities in the hands of the owner, or those of that scarce article, a careful servant. In places where stocks cannot readily be replenished, it is not safe to lay in the exact quantities, as some may accidentally be spoiled, or a harder day's work than usual will require extra feed. Some horses, like some men, are heartier feeders than others, and really require more than the theoretical average allowance to keep them in condition. The average is correct among a number of animals; but for a "one-horse" arrangement it only gives an approximation, though a near one.

If the animal powers be taxed to their utmost capacity, they must be sustained by high feeding, and a horse's stomach, or rather his powers of digestion, have then to be the measure of his feed. Grain is here intended. Any increase in the quantity of hay would be detrimental. The less of it that hard-driven horses get, the better, so long as they have enough to make *that bulk* of food which is so absolutely essential to health.

A Variety in Food.

An occasional change of food is beneficial. A bran-mash, given after a hard day, or on Saturday night, when the next day is to be one of rest, or easy work, helps to keep the bowels in order. Two gallons of bran, and half a gallon of Indian meal, scalded, and allowed to stand steaming (covered up) until cool enough to be eaten, will serve this purpose, and at the same time keep up the animal's strength. When used as feed, mashes should not be sloppy, but for sickness they should be so. Considerable judgment and care is required in substituting one kind of food for another. It must be done very gradually, or serious sickness may result. A full ration of wheat, for instance, given to a horse accustomed only to oats, would probably bring on a serious attack of colic.

Grain should be fed by weight, one kind being so much heavier than another. A gallon of Indian corn weighs nearly twice as much as one of oats. It is more convenient to have measures of the proper capacity to contain a ration, than to weigh each one as required. Among English-speaking people the oat is regarded as the standard grain for horses, though Indian corn alone is used through extensive regions. In the East, barley and chopped straw are the exclusive articles of food. Peas are useful as an adjunct to oats, in the proportion of ²/₃ oats to ¹/₃ peas.

The Carrot is *the* root for horses, as it exerts a beneficial action on their health, and may be given, cut in long slices, in rations of five or six pounds. Other roots, turnips, parsnips, ruta bagas, beets, mangolds, potatoes, are all relished, and may be used occasionally with advantage.

It is of very questionable benefit to turn a horse out to graze after his day's work is over, and even sometimes an act of cruelty. It is so when a poor brute that has been forced to labor hard in our service all day, has to cut his own food through the night; and he is often obliged to do this on an indifferent pasture, at a time when he should be resting.

The knowledge gained from over thirty years' experience as an owner and user of horses, is, that grazing is altogether a mistake for those at hard work, though it is an advantage to substitute some of the kinds of green fodder, previously mentioned, for the hay (or a portion of it), during a month or six weeks in summer. It is not intended to deny that very great benefit will most likely be derived by a sick or stale horse from a few weeks' run, that implying *complete idleness*. If he gets about half his working allowance of grain, he will go to work again like a new animal, and be fit for it, too, as the grain keeps him in good, hard condition.

It is decidedly an advantage to crush or crack all grain fed to animals, as a matter of economy, because, after the operation, the whole will be digested. If left to the teeth, some grains will escape mastication, and be

voided whole, particularly by a greedy feeder. The use of chaff, to about twice the bulk of the grain, and mixed with it, in a measure forces horses to grind its food properly.

To give cut feed altogether is probably a matter of questionable benefit. The operation may save a little hay, which, when chaffed, is swallowed more quickly than when long. For animals working during many hours this is claimed as a merit. This speed is at the expense of a deficient admixture of saliva with the food, and is consequently a source of indigestion. With horses, indigestion frequently means colic, and colic—death.

A comparatively idle horse should be allowed to take all the amusement he can get out of his hay, instead of shortening the time required for its consumption, by putting it through the cutter. It will tend to save the manger and stable fittings from his teeth.

The hours of feeding will depend so entirely on the work to be done, that specific directions cannot be given, but the most regular hours possible must be adopted. Recollect that the horse's stomach is but a small one, and requires to be frequently replenished. He should not go more than four, or at the outside five hours without feeding. Give about half the daily ration of hay, and one-third of the grain, in the evening, and the remainder at the most convenient times during the day. It is thought that more good is derived from the grain if fed *after* the hay has been eaten.

A lump of rock salt should be within the reach of every horse, one might almost say of every animal, to be licked when inclination prompts. If rock salt is not attainable, a little common salt should be given occasionally in the feed.

Water and Watering.

The safest plan of giving water, is to have it within reach at all times, of course excepting when a horse is over-heated. Then half a pail of water, with the chill off (not warm), in which half a pint of oat or Indian meal has been stirred, is at once safe and refreshing. This is also useful on a journey, as on a long one a horse cannot feed every twelve or fourteen miles without cloying the appetite. Something is then wanted immediately between feeds, and a drink of meal and water is the thing to be given.

If water cannot be supplied constantly to a vessel in the stable, the next best way of watering is at a tank or brook, to which the horse is led, and where he can take as much as he pleases. This *ad libitum* use of water cannot be indulged in when fast work is required, but this is not written for the racing stable. In ordinary work it is safe and comforting. Very many horses are seriously injured from the absurb notion that restraint is necessary in drinking, and many are killed by it. A horse so restrained will surely, some time or other, get the opportunity for a *big drink*, an opportunity he will as surely make use of, and perhaps fatally. The animal that habitually has access to water, will not consume so much, nor evince that desperate, eager desire shown by those that are restrained, and may usually be allowed, and with safety, to take it at any time. If the opportunity of a watering place presents itself, a mile or so before reaching home, and the horse allowed to drink there, even if somewhat warm, he will be ready for his feed immediately after being unhitched.

A good bed keeps a horse clean when laying down, and aids his rest. Wheat straw is the best article of which to make it, and about five cwt. per annum will be needed.

Diseases of the Horse.

Horses are liable to many ailments, and some that run their course very rapidly. It is not possible, within the limits of this article, to discuss them, and their treatment should be left in the hands of the Veterinary Surgeon. To treat diseases empirically is highly objectionable, either for man or beast. It is better to maintain health by careful and regular feeding, cleanliness, and the avoidance of draughts and chills, than to have to resort to doctoring. Should a horse seem unwell, a little judicious *inaction* is often the best course. A day's rest, stoppage of the grain rations, and restraint in the matter of hay, will be likely to put him quite right again. Three bran mashes, given on alternate nights, in which 1 oz. Flowers of Sulphur, 1 oz. Cream of Tartar, 1 oz. Nitre, and 1/4 oz. of Black Antimony have been mixed, will probably cure trifling ailments, and be specially useful for hide-bound, surfeit, itchiness of the skin, cracked heels, or similar disorders, and, in conjunction with topical treatment, effect a cure. If there is indigestion and its consequent flatulence, the addition to each mash of 1 oz. of Ground Ginger will be useful.

An unthrifty horse will receive great benefit from 3 oz. cold-drawn Linseed Oil, given every alternate night, for a fortnight, in a cold mash. It will not produce any immediate effect, but in a month the skin should be soft, loose, and glossy, and a manifest improvement in flesh be visible. Boiled barley, in which a little molasses is mixed, is a fine help in bringing a horse into flesh.

Young horses, when shedding their teeth, or cutting the bridle teeth; and older ones, when put on higher feeding than they are accustomed to, sometimes suffer from a swelling of the mouth called *lampas*. The ridges or bars project below the teeth, and prevent or interfere with mastication. For constitutional treatment, give the mashes previously described, and either scarify the bars with a sharp knife, or rub them with a stick of lunar caustic. Horses to whom the mashes have been given, and whose mouths have had no other treatment than frequent rubbings with coarse dry salt, have rapidly got rid of the lampas. Other swellings of the mouth, or rather inside the cheek, called *bags*, or "barbs," can be reduced in the same way.

Attacks of Colic most frequently are the result of carelessness, and generally may be traced to a horse having drank cold water when heated, or immediately after being fed, by being gorged with food after long fasting, or being chilled by currents of cold air. Some horses are constitutionally more liable to it than others. The first symptoms are a general fidgetiness, accompanied by lifting of the feet, very quickly, followed by violent rolling. These symptoms also indicate other disorders, requiring very different treatment from colic. There are two that distinguish colic from inflammation of the bowels. In the former, the horse will strike his belly violently with his feet, and will feed between the paroxysms of pain; but in the latter, though he may lift his feet, he will not strike, and the pain is continuous.

When colic symptoms are accompanied by constipation, the first care must be to empty the bowels by "back-raking" and injections of warm water. Here, clearly, the stimulating medicines proper to flatulent colic would be inappropriate, and most likely produce inflammation of the bowels. Flatulent colic is the more frequent and sudden form, requiring prompt treatment, and perhaps with what may be at hand in a country place. A horse got quickly well after the administration of 1/4 pint of Gin, and 2 oz. of Ground Ginger, mixed with water to fill a soda-water bottle, from which it was poured down his throat. Equal parts of Whiskey and Milk, and from half a pint to a pint at a time has been useful. A veterinary prescription for colic, is:

> Spirits of Turpentine, 4 ounces,
> Linseed Oil, 12 ounces,
> Laudanum, 1½ ounce,

to be mixed, and given every hour until the pain ceases. Bathing the belly with hot water, and friction, are both useful. If a horse is led about quietly, not galloped, as will be done by ignorant grooms, it will aid the action of the medicine, and prevent a horse from hurting himself by rolling, as he will be apt to do, during the paroxysms of pain.

Worms are a *bête noir* to horse owners, and probably get credit for doing more mischief than they really cause. They are chiefly of two kinds: one, pinkish in color, and like an angle worm in appearance, and the other much smaller, and resembling a short piece of thick thread, or fine twine. The first is found chiefly in the small intestines, and the latter in the parts near the vent. A horse infested with the larger kind of worms will have an irregular appetite, eating voraciously at times, but without deriving benefit from his food; and is apt to be weak and thin, showing that certain sign of unthrift, a staring coat. It is this variety that is most mischievous; the smaller ones being more annoying than injurious, causing, as they do, very considerable itching and irritation. A scurfy appearance about the vent, and under the tail, indicates the presence of worms.

A medicine composed of 2 drachms of powdered Sulphate of Iron, and 1/2 drachm of powdered Ginger, mixed with Linseed Meal into a ball, to be given every morning for a week, and followed by a dose of Linseed Oil, is a recognized mode of treatment for the larger pink worms. The smaller ones are best dislodged by the daily injection of a pint of Linseed Oil, mixed with a little Turpentine. Occasional washes are useful, as the appetite and the bowels may indicate.

Bots may be killed by giving medicines sufficiently strong to be fatal to the horse, and so get rid of both together. Their attachment to the stomach is mechanical, and they will remain there until the season of their escape arrives. To *prevent* them, let the eggs from which they proceed, and which may be seen as yellow nits attached to the hairs of the legs, and some parts of the body in summer, be removed, so that the horse can not get them into its stomach by licking.

(CONCLUDED NEXT MONTH.)

Loading Hay.—To properly dispose of the hay as it is pitched upon the wagon, requires considerable skill. Long, wide, and low loads are much better than the opposite, for both the pitcher and the loader; besides, there is much less danger of the load slipping off, or the wagon being upset by an unequality in the surface of the field. If a horse-fork is used for unloading, the person who manages the loading should bear this in mind, and so place the hay as it is pitched to him, that the fork will work to the best advantage.

How to Build a Small Boat.

Boats are often a great convenience, if not a necessity upon a farm, besides which they may be a source of much healthful recreation. It is our aim to answer here many questions about boats by describing the construction of two of the leading sorts of small boats. A cheap and durable flat-bottomed boat may be made in the following way: The bottom is of two white pine boards, or other light, strong stuff, tongued and grooved together, and afterwards cut to the shape shown in figure 1. The proportions given in the engraving may vary to suit circumstances. Cut the edge very accurately, giving to it a slight bevel upwards that the joint with the side boards may be close and watertight. The stern is usually made of a Tamarack "knee," though other wood will answer, in the shape shown in figure 2. The front of the upright part of the "knee" should be bevelled to an edge, the bottom being dressed and fastened to the keel with screws or wrought nails. The stern should be 6 inches wider at the top than at the bottom; 1/4-inch Spruce stuff is best for the sides. To give the proper shape to the boat, two mold-boards are put in at the dotted lines shown in figure 1, to be removed when the sides are in place. Clamps should be used to hold the side boards in position while being fitted to the stem and stern. Lap the second board nearly one inch over the first, and place a piece of cotton cloth dipped in tar between the boards to make the joints water tight. After the sides are in, remove the molds and put in two ribs which should be of white oak, 1/2 by 1 1/2 inch, made pliable by soaking in water, and secured in place by clinched nails. A strip of board, 2 inches wide, should be nailed around the outside of the boat near the top, or gunwale, and the seats, etc., put in, as shown in figure 3. The pair of oars may be of ash, but many will prefer paddles for a small boat of this kind. The cost of such a boat will depend very much upon the finish given it.

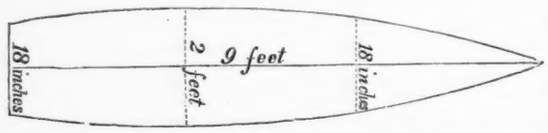


Fig. 1.—BOTTOM OF FLAT-BOTTOMED BOAT.

Fig. 2.—A "KNEE."

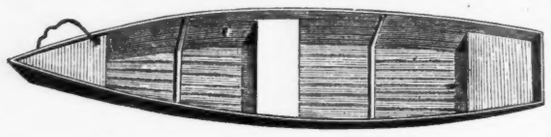


Fig. 3.—THE FLAT-BOTTOM BOAT COMPLETED.

LAP-STREAK BOATS; suitable for rowing or sailing, may be made of any desired size; the proportions to be observed in building them are, to have the length 4 or 5 times the width. The greater width being adapted for mast and sail. The first item in the construction of this boat is the keel, which should be a piece of strong white oak, 6 inches wide and 2 inches thick, dressed to an inch at the bottom, and grooved at the top, to receive the first streak, or side board. This keel should be fastened upon trestles, by means of wedges, to enable the work to be conveniently done. The stem of the boat may be of a "natural crook" of hard-wood, sawed to a proper curve, and mortised to the end of the keel. The stem, after being cut to a proper shape, is firmly fixed to the rear end of the keel of the boat by a "knee."

The three mold-boards, to give shape to the boat, are next made, and fitted lightly to the keel, as they are to be removed when the sides are finished. The trestles, and keel, with the stem, stern, and mold-boards are shown in fig. 4. The next work is laying on the streaks, or side boards. These should be made of white pine, spruce, or cedar, smoothly dressed. They need to be cut of a particular shape, and this is determined by clamping the streak upon the molds, as shown in figure 4, marking the line to be cut, with a pencil. The first board is fitted to the keel and firmly nailed the whole length, no nails being driven into the mold-boards. The nails should be very pliable, so that they can be easily clinched on the inside with a light hammer, a heavy one being held on the head of the nail. As soon as the sides are finished, the ribs may be put in; they should be made of white oak, and secured in place by clinched nails. There should be some short ribs running up only part way from the bottom of the boat. A narrow board is nailed upon the inside to the ribs, a short distance below the rim, for holding the seats, etc. The gunwale is made by nailing a streak along the inside of the boat, it resting upon the ribs. The rowlocks, rudder, etc., may be arranged as shown in figure 5. If it is desired to have the boat arranged for a sail, the mast can be "stepped" into a piece of plank placed in the forward part of the boat, with a strap of iron to embrace the mast, fastened to one edge of the forward seat. All the parts as they are put together should receive a good coat of paint, so that the boat may be water tight, and as durable as possible. When not in use keep it under cover.

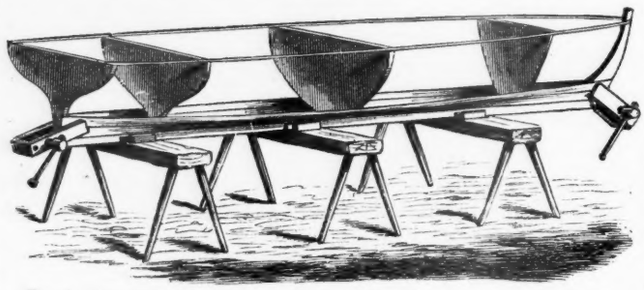


Fig. 4.—THE TRESTLES, KEEL, STEM, STERN, ETC., OF LAP-STREAK BOAT.

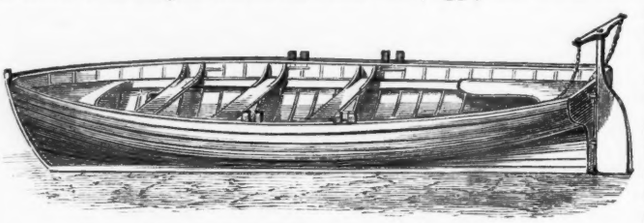


Fig. 5.—THE LAP-STREAK BOAT COMPLETED.

In treating this important subject of Boat Building, about which we have so many inquiries every year, we have reproduced some illustrations which were used ten years ago.

Canada Thistles.

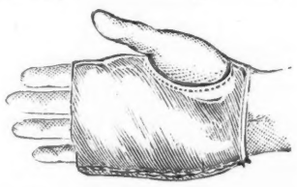
There is a common impression that Canada Thistles can be readily killed, if cut at the right time, and several have asked, "what is the proper time to cut them?" The life of this troublesome weed is governed by the same laws as that of other and useful plants. If we set out a bed of Asparagus or Rhubarb, we do not cut the shoots of the one or the leaves of the other continuously all through the season. We take the early shoots and leaves, but stop in time to allow the foliage to prepare a stock of provisions, and to store it in the magazine below ground—the roots, in order that we may have a crop the following year. In these cases we cut in such a manner as to save the roots. With the Canada Thistle and other perennial weeds, we wish to cut so as to destroy the roots. The thistle pushes up its stems, these flower and bear seeds, and it does this largely from its underground stores of food. Having provided for flowers and seeds, the leaves of the thistle are at work increasing and strengthening the roots for the next year's crop. Hence the underground part of the plant is at its weakest at flowering time. By cutting it then, we not only destroy all the work it has done in preparing the flowers, but we at the same time prevent it effectually from maturing its crop of seeds. When the stems above ground are cut away, the roots push other stems, and at this time, instead of storing up supplies, the roots are expanding them. This, then, when the Thistle is blooming, or about to do so, is the time when the greatest injury can be inflicted upon it. But with the Canada Thistle, once cutting, while it greatly weakens, will by no means kill it, and there is no time at which it can be destroyed at a single cutting. The only proper way with this and similar plants is, to cut the shoots that first appear, and to continue as long as there is anything to cut. That continued and persistent cutting will conquer the Canada Thistle, and that even worse weed, the Horse Nettle (*Solanum Carolinense*), we have positive knowledge, but no half-way work will prevail. It has been frequently advised for Canada Thistles, to cut just below the surface of the ground, and apply salt to the cut root. Perhaps salt is of service in killing a portion of the root, but it is only practicable on a small scale. Where the weed abounds, and it has been decided that it shall be eradicated, the reliance must be upon cutting, which must be done often and continuously, even if the work leads one into the next year—and the next.

Quickly Maturing Live Stock.—The best beef is young beef; reaching its greatest point of superiority at from 2 to 3 years. The same is true of sheep and swine. A wether, for the best mutton, should be in

market at two years. As a general rule, a 250-lb. pig is much better in quality and more profitable than a hog that weighs 500 lbs. The point of appreciation of quickly maturing animals is being reached, though somewhat gradually, and it remains to improve the various breeds, especial regard being taken to carefully select those animals to breed from that come to maturity at an early age.

A Hand Protector.

Mr. Samuel R. Ludlow, Fannin Co., Texas, writes :—"One 'trick,' as they say here, has done me good service, and I am glad to mention it for the benefit of others, namely :—a leather protection for the hands, which is very useful, while handling timber, brush,

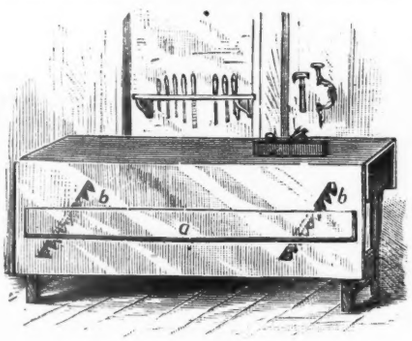


HAND PROTECTOR.

and briers. This protector is made by cutting a section of an old boot leg, so as to pass around the hand. Cut a hole for the thumb at one side, near the edge, and lace up the band of leather on the opposite side with a leather thread cut from some other part of the boot. This is a good 'glove' to wear, and enables one to pull down vines regardless of thorns, and where they are as abundant, aggressive, and persistent as ours, quite an item in time is saved by using this protector."—The engraving herewith given is made from a neat sketch of the hand protector which accompanied Mr. L.'s letter.

A Movable Side to a Work Bench.

A "Rest" that can be raised or lowered, is very convenient for holding long, wide boards while planing their edges. Mr. Josiah Crowfoot, Washington Co., Wis., sends a sketch of a movable side to a work bench, from which



MOVABLE SIDE TO A WORK BENCH.

the engraving herewith presented, is made. The movable board is shown at *a*, and is so adjusted as to be always level, or parallel with the top of the bench. There are two slanting holes, *b*, *b*, with steps, about 1½ inch rise, and at an angle of 45 degrees, so that when a narrow board is raised up against the straight sides of the slots, it is elevated equally at both ends. When it is desired to lower the "side," all that is necessary is to push it against the straight side of the slot and let it drop as far as needed. The board, *a*, can be 4 to 6 inches wide, having 1-inch pins through it, to rest in the slots, with a little piece of board on the inside of each to keep the pins in place. The construction of the movable slide or "rest" of the work bench is made clear by the accompanying engraving.

The Army Worm.

The alleged appearance of the Army Worm in the States of New York and New Jersey, has caused alarm among farmers in the localities where it is said to have appeared. It is so much earlier (the middle of May) than it is usual for the insect to take up its march of devastation, that it is most likely that some other caterpillar has been mistaken for it. The newspaper accounts that have thus far appeared are, of course, very indefinite, but so far as can be inferred from the description of their ravages, and the fact that they have thus far injured only garden crops, we doubt if the Army Worm has been seen at all. From the meagre accounts given, they are no doubt one of the several Cutworms, which are never excessively numerous, and may be easily captured. As to the true Army Worm, we gave a year ago—July 1880—a history of the insect, and engravings, that will allow it to be readily recognized, and those interested are referred to that number. When the "Army" was close at hand last year, on Long Island, various methods of arresting it in its march and diminishing the numbers were suggested by us, and these and others were tried upon a large scale. But two modes of warfare seemed to be of value ; one of these was to make a trench across the line of their march and place in this freshly cut grass, Red-top being their favorite food. The grass was sprinkled with water in which Paris Green or London Purple was stirred, precisely as if it were to be applied for Potato-beetles. Large numbers were thus poisoned. The second method, and the one preferred to all others, was to prepare the trench and to dig pits or holes every rod or so in the bottom of it. These pits, about a foot square and two feet deep, must have straight, smooth sides. The trench is made by running the plow two or three times in the furrow, and with its straight side next the field to be protected; it is finished by the use of spades, making the side towards the field as straight and as smooth as possible. The worms being checked by the wall of the ditch, wander to find a place of escape, and fall into the pits. When one set of pits is nearly filled with worms, others are dug, using a part of the earth to fill up the first made pits and bury their contents. It is necessary to keep watch of the trench, lest some break may allow the army to pass over it. The worms rest during the night, but as soon as they feel the warmth of the morning they start on their march.

Top-dressing Meadows.—As soon as the first cut of grass is made, an application of well-rotted, finely divided manure may be made with very profitable returns. The manure protects the exposed surfaces of the base of the grass plants from the heat of the sun, and furnishes the necessary nourishment to the roots of the plants. A new growth is soon produced, making the land profitable either as a pasture or for a second mowing.

The Rocky Mountain Locust, *alias* Western Grasshopper.

BY PROF. C. V. RILEY.

The Western readers of the *American Agriculturist* are intensely interested in everything pertaining to the destructive insect, known as the Rocky Mountain Locust, and at the request of the Editors I give herewith a summary of facts concerning it.

EGG-LAYING AND HATCHING.—Figure 1 illustrates the manner in which the female lays her eggs. With two pair of horny valves at the tip of the abdomen she is able to drill a cylindrical hole in the ground, preferring for this purpose soil that is rather firm, though not too hard. In a moist climate, or where vegetation is rank, she chooses bare and exposed places, but in her native range,

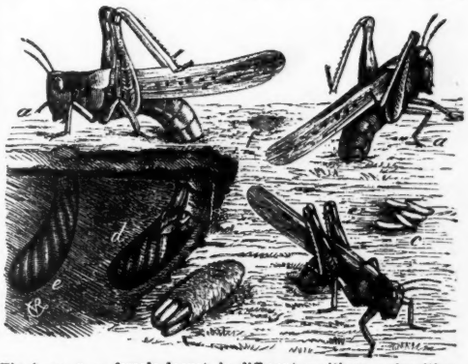


Fig. 1.—*a*, *a*, *a*, female locust in different positions, ovipositing; *b*, egg-pod extracted from ground, with the end broken open; *c*, eggs; *d*, *e*, earth partially removed, to show an egg-mass already in place, and one being placed ; *f*, shows where such a mass has been covered up.

viz., the Northwestern Plains, where the vegetation is usually scant and short, she chooses rather the shade at the base of some Sage bush or Greasewood shrub. When the hole is once drilled the eggs are laid in four tolerably regular rows (fig. 2), interspersed by a fluid which is frothy and mucous, and which dries around the eggs and fills up the neck of the burrow (fig. 2, *d*). Each female lays from two to three batches of eggs, each batch containing about 30 eggs. The eggs are laid throughout the late summer and fall months until winter sets in, at which time every stage of embryonic development can be found. The great bulk of the eggs remain unhatched until the ensuing spring.

HABITS AND DEVELOPMENT.—The young locusts congregate in large numbers in warm and sunny places. At night, or during cold and damp weather, they usually huddle together under any shelter or rubbish that may be at hand. They do not migrate until they have eaten off the vegetation where they

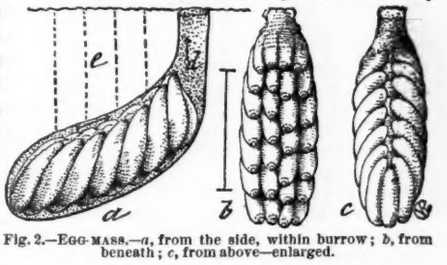


Fig. 2.—EGG-MASS.—*a*, from the side, within burrow ; *b*, from beneath ; *c*, from above—enlarged.

hatch. This usually happens when they are about one-third or one-half grown. They then travel during the warmer hours of the day by alternately walking and hopping in vast bodies in some given direction. In thus travelling they move at the average rate of about three yards a minute. There is a widespread popular belief that they are led in these movements by so-called kings or queens, but this is an error, and the belief is due to the fact that other large, full-fledged locusts belonging to other genera, which hibernate in the winged state, are frequently seen with these marching bevies. There are six stages of growth, *i. e.*, the locust moults at five different periods. The change at each of these moults is but slight, and the wing-pads are first distinctly noticeable and turned up

in the fourth stage, or after the third moult. After the fourth moult we have the true *pupa* stage (fig. 3, *c*), and with the fifth moult the wings are acquired, the process being illustrated at figure 4. The time required from hatching to full development varies according to season and weather, cold and wet weather retarding, and warm weather accelerating development. It averages, however,

Fig. 3.—*a*, *a*, newly hatched larvæ; *b*, full-grown larva; *c*, pupa of the locust.

two months. There is but one generation each year, the term of the insect's life being bounded by the spring and autumn frosts.

FOOD PLANTS.—The Rocky Mountain Locust, when hard pushed will feed upon dry bark of trees, or dry lint of timber; upon paper, cotton, and woollen fabrics, as well as upon the more helpless of its own kind. It has even been known to feed upon dead animals. Yet, when proper food is plenty, it prefers acid, bitter, or peppery plants to sweet ones.

DESTRUCTIVE POWERS.—The destructive powers of these insects have been dwelt upon from the earliest times. I cannot better illustrate their work than by quoting the following from the First Report of the U. S. Entomological Commission:

"Falling upon a cornfield, the insects convert in a few hours the green and promising acres into a desolate stretch of bare, spindling stalks and stubs. Covering each hill by hundreds; scrambling from row to row like a lot of young famished pigs let out to their trough; insignificant individually, but mighty collectively, they sweep clean a field quicker than would a whole herd of hungry steers. Imagine hundreds of square miles covered with such a ravenous horde, and one can get some realization of the picture presented in many parts of the country west of the Mississippi during years of locust invasion."

MIGRATION, FLIGHT.—The winged insects make extensive flights, the movement of migrating hordes being steady and long-sustained. The insects often rise to a hight at which they are lost to human vision, and they have been seen with the telescope as far above the highest peaks of the Rocky Mountains as the instrument would resolve them. The rapidity of flight depends almost entirely upon the velocity of the wind, which they know well how to make use of. They rise as by a common instinct when the sun has dissipated the dew, and generally descend again toward evening; but under favorable circumstances they can and do continue their flight during the night and may travel 400 or 500 miles at a stretch. It is by means of these extended flights that they swoop down upon the fertile States of the Mississippi Valley, carrying destruction in their wake.

The Locust dwells habitually in the plains and plateaus of the Rocky Mountain region north of Pike's Peak, but particularly in the vast plains east of the Mountains on either side of the boundary line between the United States and British America, and extending toward the north. Whenever the conditions are favorable to their excessive multiplication there, viz., after two or three years of unusual drouth, they migrate in immense swarms and extend over most of the country west of the Mississippi, never reaching east, however, much beyond the meridian of St. Paul, and never quite reaching the Gulf, but stopping within 40 or 50 miles of Galveston. We have the invading swarms from the native habitat one year, and the return swarms thereto the following year, the former occurring in late summer and fall, and aided by the prevailing winds which, at that season are from the northwest, the latter occurring in early summer, and similarly aided by the prevailing winds which, then, in the Mississippi Valley, are from the south or southeast.

ENEMIES.—The Locust has a large number of enemies, almost all birds that occur in the western country feeding readily upon it, and many reptiles and quadrupeds doing likewise. An interesting and effective enemy is the Locust Mite (*Trombidium locustarum*), living as a six-legged larva attached to the wings and the body of the mature locust, and feeding in the perfect state upon the eggs. The larvæ of our common Blister-beetles, and those of the Bee-flies (*Bombyliidæ*), are frequently found destroying the eggs of the destructive locust.

REMEDIES.—The farmer has been, so far, comparatively at the mercy of the winged swarms that come unbidden, and frequently unheralded, but he can effectually battle with the unfledged insects as they hatch out upon his farm or threaten to invade it from neighboring fields. Harrowing over the ground infested with eggs or any mode of disturbing these and exposing them will prove useful, but, as a rule, all efforts to diminish the number of eggs will prove more or less unsatisfactory. The fight is, therefore, with the young insects. Their habit of huddling together under shelter during cool nights, for some time after they are hatched, permits them to be trapped in windrows of straw or hay, and then burned in myriads. Judicious ditching will protect a field from invasion, and there are hosts of devices for bagging and crushing them. The most satisfactory, and cheapest way of destroying them is by the use of kerosene, and a simple sheet-iron pan made after the plan shown at figure 5, or something still simpler, as shown at figure 6. The bottom of the pan is thinly covered with coal oil or tar, and drawn by lads, or, if made very long and heavy, by horses. The young 'hoppers jump into the pans, and, no matter whether they jump out again or not, the slightest touch of the coal oil is sure to prove fatal. The greatest number perish within the pans, which have to be emptied occasionally; the dead locusts thus collected should be buried.

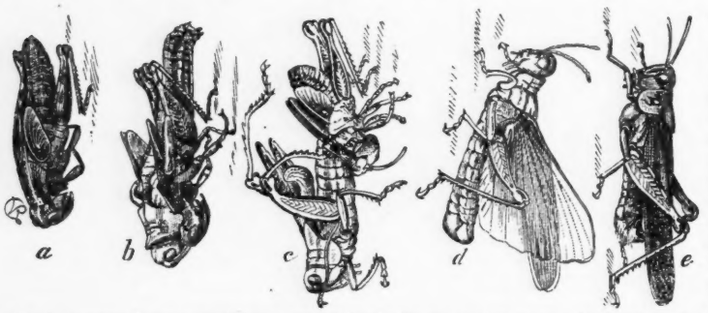


Fig. 4.—Process of acquiring wings; *a*, pupa with skin just split on the back; *b*, the imago extruding; *c*, the imago nearly out; *d*, the imago with wings expanded; *e*, the imago with all parts perfect.

Another way of using coal-oil in those parts of the West where irrigation is resorted to in agricultural operations, is to float a little of the oil upon the water in the ditches. A simple mode of doing this is by perforating a tin can on the sides near the bottom, a chip of wood to be loosely inserted in the aperture. The can is then filled with tar or oil, and sunk (by a weight if necessary) in the ditch. Three quarts of tar or oil, trickling out drop by drop through this orifice, will keep the surface of the ditch supplied with a faint scum for nearly two days, and all locusts driven in such a ditch are destroyed. Fruit trees, and other valuable trees, are often seriously injured by these locusts, especially when they have acquired the pupa state. Simple whitewashing will largely protect them, as the lime crumbles under the feet of the insects as they attempt to climb. Still, it has to be repeated, and there is no better or cheaper protection in the long run than a strip of bright tin, from 4 to 6 inches wide, brought around and tacked to the tree. If the tree is very rough, the tin should be tacked to a piece of old rope, or other material, that will fill up depressions, and prevent ascent underneath. The tin should be high enough from the ground to prevent the insect from jumping from the latter beyond it, and a little coal tar, or some poison should be used below the tin to prevent girdling.

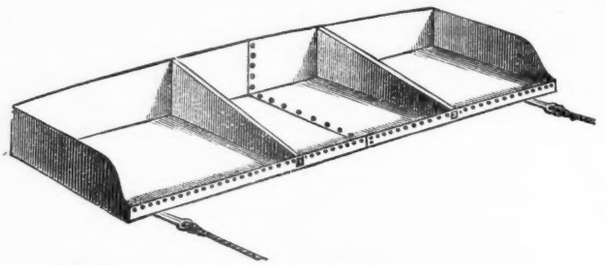


Fig. 5.—LARGE COAL-OIL PAN FOR CATCHING THE LOCUSTS.

In thickly settled communities it is quite possible, by concentrating the efforts of the whole people, in the manner described, to either drive off or destroy the bulk of such swarms, as the Mennonites so often do. Diversified agriculture is one of the best safeguards against locust injury. There are many plants that are more or less distasteful to the locust, and are left untouched unless the swarms are very heavy and have devoured everything else. Such plants are peas, castor beans, sorghum, broom corn, tomatoes and sweet potatoes.

PROSPECTS.—The western farmer is always greatly concerned as to the prospects. There are certain laws governing this insect, which enable us to predicate as to its future with tolerable accuracy within certain definite periods. I am warranted, from last year's observations, in expressing the belief that we shall have no serious trouble the present year. A few light swarms were noticed last autumn, and in some restricted parts of Texas they alighted and laid eggs. In parts of Colorado they have also hatched out in limited numbers the present spring, and we may expect local injury, but no wide-spread flights or destruction. A study of the records of past general injury shows that such years recur on an average of about eleven years, and should the present year, and 1882 and 1883 prove extremely dry in the Northwest, I have little doubt that about the middle of this decade our western farmers will again suffer materially from the locust.

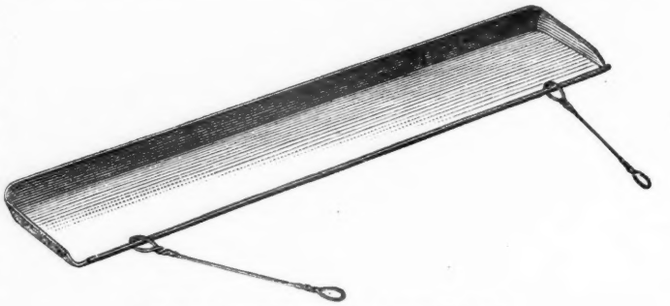


Fig. 6.—A SIMPLER FORM OF A COAL-TAR PAN.

The Japan Solomon's Seal.

Those who study the geographical distribution of plants, find a great similarity between the vegetation of Japan and that of North America. Unexpectedly this similarity does not exist in a marked degree where one would most expect it—between the plants of Japan and those of our western coast, but singularly enough it occurs between the eastern side of our Continent and that of the Old World. In many cases the same plant is found in the Eastern States and in Japan, and not upon our western coast. The similarity in the floras of the two countries does not consist so much in the occurrence of the same species in both, as in that of representative or equivalent species. For example; our poisonous tree-like Sumach has its equivalent there in a similar, but not identical poisonous one; and so on through a long list. Among our familiar spring flowers are the Solomon's Seals (*Polygonatum*), and at least three species are found in Japan. These plants get their common name because their fleshy root-stocks show upon the upper surface depressions somewhat like those made in wax by a seal. These marks show where the stems of the preceding years were attached. One of our species, the Great Solomon's Seal (*P. giganteum*), though ordinarily but two or three feet high, will in very rich soil reach five, and even eight feet, and is a very interesting plant. It is, however, excelled in beauty by a Japanese species which has been cultivated in Europe for some years as *Polygonatum Japonicum*, but which Sir Joseph Hooker now regards as a large-flowered form of *P. vulgare*. This flowered last May in the grounds of C. L. Allen, Garden City, L. I., who furnished specimens for drawing. The engraving of the upper portion of a stem is much reduced, but a single flower of the full size is given. The plant grows from two to four feet high, and has the same gracefully curved stem and pendulous flowers as our own. As a garden plant it is much more ornamental, as to its flowers, than either of the native species. In ours the flowers are yellowish, or of a dull greenish-white, while in this the tube of the flower is pure white, with the short lobes of a pleasing light green. A clump with our taller native species in the center, and surrounded by this one from Japan, would be most striking, and from the peculiar habit of the plants, at the same time graceful. The name given to the plant by Hooker is *Polygonatum vulgare*, var. *macranthum*, but for garden uses the Japan Solomon's Seal is sufficiently distinctive.

THE JAPAN SOLOMON'S SEAL (*Polygonatum vulgare*, var. *macranthum*).

THE CHICKWEED PHLOX (*Phlox Stellaria*).

Phloxes—The Chickweed Phlox.

Probably no other American genus of plants affords to the flower garden such a number of unlike form as does the *Phlox*. The annual *Phlox Drummondii*, has produced distinct varieties enough to alone furnish a garden with almost every shade in color, while the perennial species are very numerous, and present such a variety in habit, that they may be for garden purposes regarded in three distinct groups. One set are properly alpine in habit; of these the beautiful *P. subulata*, or Moss Pink, is the best known, but there are many others in the Rocky Mountains and westward, some of them more truly alpine, and quite unknown to cultivation. Next to these are several that may be grouped as "Running" or "Creeping Phloxes." These are perennial, but their principal stems are prostrate, though their flowering stems are erect. Lastly, there are the well known tall Garden Phloxes, which are generally called the "Perennial Phloxes," though all but *P. Drummondii* are also perennial. "Perennial Phloxes" have been so hybridized that the original species are quite lost sight of, and a vast number of garden forms of the greatest beauty and variety are the result. We have often commended these, and shall probably do so many times again, for we know of no more useful plants, combining as they do the greatest variety and beauty with perfect hardiness and ease of culture. It is remarkable for one genus to have produced what may be regarded as the most widely popular annual, and well nigh the most useful perennials of our gardens, but its possibilities have not yet been exhausted. In the Alpine section, while there are a number yet unknown to our gardens, and may be regarded as raw material in reserve, florists have been at work upon the one so long cultivated. The Moss Pink (*Phlox subulata*), varies so in the wild state that its forms have been described, and named as species; this has of late been taken in hand by European florists, and already varieties of encouraging beauty have been obtained. The group we have designated as "Running," appears to have received but little attention at the hands of the florists. This may be because of the irregular rambling

habit of the plants, though in some, the flowers in their natural state are of tints not found in the other section, and in two species the lobes of the corolla are deeply divided or cleft. If these will hybridize with the section of "Perennial Phloxes," it will allow new forms, and perhaps new colors to be introduced among them. One of the rarest of the species of this section—indeed one of the rarest of our Phloxes, unless it may be some of the high mountains, is *Phlox Stellaria*, it having been found only in a locality in Kentucky and sparingly in Southern Illinois. The slender, smooth stems are six to eight inches high, the leaves narrow, the flowers white, with a bluish tinge, are of the size given in the engraving, and as there shown each lobe is cleft, as are the petals of the Chickweeds (*Stellaria*), a resemblance that no doubt suggested the specific name. There is but one other species of Phlox with the lobes thus split, *P. bifida*, which is less rare than the present one, and is found in Illinois and Missouri. It differs from its relative, among other points, in being downy and in having pale purple flowers.

The Grape-Vine Leaf Hopper—"Thrips."

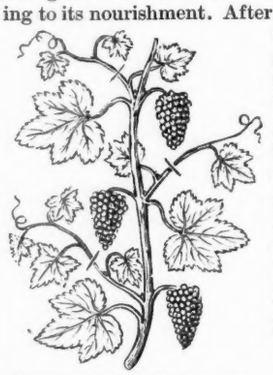
The little insect so common upon grape-vines, generally known as "Thrips," is very different from the true Thrips of the green-house; though placed in the same order of insects they belong to very unlike genera. In July and later, if one passes through a vineyard where they abound, he will be annoyed with clouds of a minute insect, which as it flies gives the impression of being of a dirty white color. If examined with a microscope, the little creature—for it is only about $^1/_{10}$ of an inch long, will be found to have great beauty; its general color is pale yellow or straw color, with red markings on its head and wings, and black dots on the tips of its wings—or properly—wing covers. The insects appear on the underside of the grape-leaves in June, but as they do not reach their perfect state, and have their wings, until later, they are but little noticed. They penetrate the leaf with their beaks and subsist upon its juices, and when present—as they often are, in large numbers, do much injury to the vine. The entomologist's name for it is *Tettigonia Vitis* (*Erythroneura* of some), and as the name Thrips belongs to a very different insect, that name should be dropped, and the Grape Vine Leaf-Hopper adopted. Some localities are quite free from this insect, and in places where it has been abundant, it sometimes suddenly disappears. It is less injurious to the Concord and others of that class, but thin-leaved varieties derived from the *æstivalis*, etc., often suffer severely, the foliage being destroyed before the fruit can mature. The insect passes the winter under fallen leaves and whatever will afford it shelter; it is advised to gather and burn the leaves soon after they have fallen. The only method proposed for attacking the living insect is to carry torches through the vineyard at night, and beat the vines to disturb them; myriads will fly into the flame and be destroyed. A correspondent, "*," at Princeton, N. J., tells of his tribulations with "Thrips" in a cold grapery, and writes in despair for aid. If any have been successful in treating this insect under glass, we hope they will tell about it.

THE GRAPE LEAF-HOPPER.

The Grape Vine in Summer.

In all our writings on the management of the vine, we have endeavored to induce the reader to observe the manner of its growth, and to illustrate general principles, rather than to lay down exact rules to be followed. Where vines are trained according to any particular system, the majority of them will grow regularly, and if the system be properly followed, the vines will look "just like the the pictures in the book." But vines are living things, and every one of them will not grow according to pattern. Some individuals will fail to produce buds in the regular place, or will push out shoots where they do not belong. In such cases, one who understands the manner of growth will know what to do with the vine; he can treat each individual according to its special needs. On the other hand he who blindly follows directions, is "all at sea," when he meets with these exceptional vines. In the nature of the case there can be no invariable rule. It is well to adopt some system or method of training and endeavor to follow it as near as may be, but when some accident, or some peculiarity of a particular vine breaks up the system, we must know how to make the best of it. We once heard the late Mr. Knox, a most successful grape grower, when asked what system of training he followed, reply: "That which will best keep my trellis filled with bearing canes," which was merely another way of saying: "I treat every vine as it seems at the time to require." In all methods of training certain points are recognized, and certain things must be done in all. When in our spring "Notes about Work," we advise to pinch the growing shoot and allow one to three leaves above the uppermost cluster of flower buds to remain, we give directions that are applicable to all vines; whether the vine is trained according to a system, or has been allowed to run hap-hazard over an arbor, this checking the fruiting shoot will be beneficial. This operation should have been done as early as the growth of the shoot allowed the number of clusters and leaves to be distinctly seen. When this check is given to the growth of the shoot in length, the remaining leaves will soon develop to a greater size and firmness, and later the fruit will be larger and finer than on shoots that have been allowed to grow at will. In the summer treatment of the vine, we wish to supplement this pinching for the benefit of the fruit, or if the vine has not been thus treated, do what we can for next year's crop. Soon after a leaf has become well developed, two small buds will appear in its "axil," or on the shoot just where the leaf stalk joins it. One of these buds will soon push to form a side-shoot or "lateral," while the other bud will remain dormant until next year.

The Laterals.—We stop the growth of these for the same reason that we did the further elongation of the main shoot—to aid the development of the fruit, or upon shoots where there is no fruit, to increase the size and strength of the shoots themselves. The engraving is borrowed from Prof. Geo. Husmann's admirable "American Grape Growing and Wine Making," to illustrate the treatment of the laterals. Here the laterals are seen to start from the main shoot, and the cross lines show where they are to be pinched. It will be noticed that the lower leaf is left upon each lateral; if the whole shoot were removed, as was formerly advised by some, the effect would be to start the other bud into growth, but allowing a single leaf to remain prevents that. After the pinching, this remaining leaf will grow to a large size, sheltering the fruit from the sun, and contributing to its nourishment. After a while, a shoot will start from the axil of this leaf, which is to be pinched, as before, to one leaf, and should there be still another shoot from this last, pinch again. More than three pinchings are rarely required. There are cases in which it is desirable to allow the laterals to grow, to get canes for a purpose, but as a rule they are to be treated as here described.



METHOD OF PINCHING GRAPE VINES.

Tendrils appear opposite each leaf where there is not a bunch. A young tendril is soft and may be removed by a pinch; when ripe it is almost as hard as wire and becomes a nuisance in after pruning. In training our vines we use a trellis with upright wires, and prefer to remove all tendrils and keep the shoots tied up. With horizontal wires it is customary to allow them to remain, where they will be of use in holding up the shoot, though we think it would save trouble to remove them and use ties of soft cotton cord.

Chance Shoots will often break through the bark on the old vine, stems appearing here and there without any regular order. It may happen that such a shoot will be useful to fill a gap; if so let it be tied up to the trellis. As a general rule such shoots should be rubbed off as they appear.

Shoots without Fruit.—It is often necessary to grow a shoot this year to form a cane from which we may get bearing shoots next season. These when they are three feet long should be pinched at the end and have their laterals treated as has been described above.

Mildew and Insects.—The vines should be sulphured at the first appearance of grayish spots on the under side of the leaves. Bellows are sold at the seed and other stores for the use. The majority of insects that attack the vine at this season are large and may be removed rapidly by hand-picking.

Horticulture in New York.—For something like a quarter of a century the people of New York City had appeared as if utterly indifferent to horticulture. The organization, a few years ago, of a Horticultural Society, showed that an interest in such matters really existed, and it only needed such a nucleus as the Society afforded to gather the scattered workers and show that there was really a large number devoted to, and successfully following, horticultural pursuits. The monthly exhibitions of the Society show an activity and interest which go far to offset the former apathy, and we doubt if the older Societies of Pennsylvania and Massachusetts can present larger or finer displays than are to be seen at Republican Hall, No. 55 West

33d St., on the first Tuesday of each month. These exhibitions are free to the public, and we would suggest to our many readers who live in or near the city, that they may pass a couple of hours at them pleasantly and profitably. It is to be regretted that such fine displays of flowers, etc., must be made in a hall so poorly suited to the purpose. There is a hope for better things in this respect, as a Horticultural Hall is proposed, and knowing the energy of those who have the matter in hand, we have reason to hope that the Society will, before long, have a room of its own. The membership has largely increased of late, and the list includes some of the most "solid" business men of New York City.

Garden Helps—Sticks and Strings.

When Hood's Mrs. Gardiner gave, as her opinion of the Dahlia, "it is nothing but a stick and a string," she only expressed the horticultural fact that this, like many other plants, must, for its successful culture, be properly supported. To continue the Dahlia as an illustration, those who cultivate this plant (among whom we are not to be counted), know what a weak hold the branches have upon the main stalk, and that with merely a central stake, a smart wind will whip off the branches just when they are most promisingly laden with flower-buds. To be safe, the branches must also be staked and tied. Climbing vines must have supports, and these, whether in the kitchen garden for peas, or in the flower garden for Canary-bird Vines, and other annuals, should be supplied to the plant very early. If the vines once get large enough to fall over with their own weight, or are beaten down by a storm, it is very difficult to induce them to take to their support afterwards. It is always safest to "brush" the peas at the time they are sown.

Stakes in the flower garden should be sufficiently strong, and at the same time as inconspicuous as possible. Green stakes are bad enough, but green stakes with bright white tops, such as we often see, are an abomination. A cedar stake, with the bark remaining, is scarcely noticed, while one of these bright-green, white-capped things is so forth-putting, that it is seen before one notices the plant to which it is a help, and should be subordinate. For climbing plants upon verandas or against the side of the house, we often see an elaborate piece of carpentry. In such places all that is needed is something that will support the vines without the necessity for nailing them to the wood-work. Screw eyes, or where more strength is needed, plain iron brackets, a simple "angle-iron," and small galvanized wire, stretched horizontally or vertically, as needed, will afford all required support to climbers, and be in themselves almost invisible. Where it is necessary to use supports made from lumber, they must be painted, but instead of the brightest of Paris-green, let the color be subdued by adding black or brown. We once saw a handsome pyramidal *Clematis Jackmanii* in a neighbor's garden. We found its support to be made of several pieces of brush, the main stems bound together with wires, as one did not afford branches and spray enough; the ends of the branches were clipped to produce a regular outline, and when covered by the vine the effect was most pleasing, while the means by which it was produced were entirely out of sight. We should add that this support was spiked to a locust post set in the ground, and projecting a foot or so above it; this is a method advisable with all supports made of perishable woods, if desired to last more than one season. In the way of ties, as with supports, there are permanent and temporary. One will find occasional use for copper wires of different sizes, these and strips of leather should always be at hand in the garden basket. For tying the arms of grape vines to the trellis, and similar uses, willow twigs are excellent. A few Osier, or Golden Willows, set in a corner, will be found useful in most gardens. The slender shoots in spring and summer afford ties; in the fall cut them back to near the ground, and keep the canes for flower-pot stakes. The value of Basswood bark is well known; this may be had by pulling apart Russia matting, or from our own Basswood or Linden. A recent material called "Raffia," supposed to be from a Palm leaf, is a very soft and yet strong material for nice work, especially to use as ties in budding. For a general tie, especially for the young shoots of the grape-vine, we find nothing better than cotton twine of the right kind. The twine used by tradesmen for tying parcels is poor stuff. It is filled with starch, which makes it harsh to use, and when the starch washes out, the twine is weak and worthless. "Sail-twine," used by sail-makers for sewing, is pure cotton without starch, very soft, and at the same time strong, and a capital material. Among other useful ties are the leaves of "Bear's-grass," or *Yucca filamentosa*, especially the long-leaved variety called *flaccida*. This readily splits lengthwise, and is astonishingly strong. These may seem small affairs to some, but success in gardening depends upon attention to details.

How to Plant Celery.

The old method of setting Celery at the bottom of a trench is still occasionally followed, either by gardeners who have done this in the old country, or by our own people who have not learned the better way of planting it on the surface. Celery is one of the plants with which little is gained by hurrying; it will not grow rapidly until after midsummer, when we have the favoring conditions of warm days and cool, dewy nights, and our most experienced gardeners do not set out the main crop until the present month. Market gardeners grow celery as a second crop, to follow an early one for which the soil has been well manured; if this can not be done, then the soil must be well enriched before planting. It rarely pays to raise celery plants in a private garden, if one is where they can be purchased. In buying plants, select those that look strong and stocky, a condition produced by proper cutting back their leaves while in the seed-bed. The plants are to be set in rows, four feet apart, and six inches distant in the rows; they require careful planting, and should be no deeper in the ground than they were originally in the seed-bed. In all transplanting, it is important to have the earth closely in contact with the roots of the newly set plant; this may be done by going along the row and pressing on each side of the plant with the foot, or by carefully crowding the earth down with the hands as each plant is set. If a cloudy time cannot be selected for planting, then do the work towards evening, and give a thorough watering. The plants have nothing further done to them until September, when the leaves are brought to an upright position, and earth is drawn around to hold them there. We hope to give the after treatment in the proper month; in the meantime, the celery has nothing to do but grow, in which it must be encouraged by hoeing or cultivating often enough to destroy all weeds and keep the soil loose, taking care in these operations to not throw any earth into the heart of the plants.

Herbaceous Perennials from Seeds.

Every now and then there is a complaint from those who have sown the seeds of perennials, that they failed to come up, and usually the seedsman is blamed for selling poor seeds. The seedsman is often to blame, not for the quality of the seeds, but for not stating the fact that the seeds will not come up the first year. A number of those perennials with hard seeds, like Fraxinella, and many others, if sown in spring, rarely germinate until the spring following. Those who have sown such seeds this spring should keep the box, or bed, free of weeds during the summer, and their patience will no doubt be rewarded next season. The majority of such slow seeds, if sown as soon as ripe will germinate at once, and if this can be done not later than the first week or two in September, they will make plants strong enough to pass the winter safely and be ready to transplant early the next spring. Of course sowing as soon as ripe is not practicable with seeds that must be purchased. In such cases it is preferable to buy plants of the dealers, which will insure a supply of seeds for increasing the stock. In sowing such seeds in August or early September, it is better to put them in a frame, or before winter sets in make a rough frame around the bed containing the young plants for their better protection. When cold weather comes, lay some fine brush among the plants and then cover with leaves. The object of the brush is to keep the snow from pressing the leaves too heavily upon and injuring the young plants.

"Hybrid Perpetual" Roses.—Whoever substituted for the French term *Remontant*, that of "Hybrid Perpetual," caused a vast deal of disappointment. The majority of those who are unfamiliar with roses, seeing that there is a class called "Hybrid Perpetual," naturally suppose that they are continuous bloomers. Experience shows that after the spring bloom, there may be a meagre show of flowers in autumn, though some will not often give this. To secure a fair late bloom it is necessary to cut out half or so of the buds that set in spring. Of course it is too late to do this, but one thing can be done to aid the second flowering—that is, to cut away the remains of the flowers and allow no "hips" to ripen. These roses, as a general thing, bear fruit abundantly, and the ripening of this is a tax upon the resources of the plant, which should be avoided—unless seeds are wanted. The young fruit should always be cut away as soon as the petals fall, whether a second blooming is looked for or not. Formerly our florists depended upon the Tea Roses, the Hybrid Chinas and a few other tender sorts for winter flowering. Now the Remontants are forced in great numbers, and at the Christmas holidays bring astonishingly high prices. Buds of the crimson Gen. Jacqminot have been sold at wholesale at $1 each.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

An "Annex" to a Coffee Mill.

H. P., Denver, Decatur Co., Tenn., is proud of his wife's kitchen, which he considers a "model kitchen." We should share in his pride, for he adds, "Almost every convenience in it was learned from the *American Agriculturist*." He, however, has one contrivance that he did not get from our pages, which he contributes to them. It is a box to stand on an ordinary coffee mill to hold the coffee, and to measure the quantity required to be ground for each meal. The mill, with the box attached, is shown in figure 1; the box is of $^3/_4$-inch stuff, has a cover at the top, and is of the proper size to fit the mill. Near the bottom of the box is the slide, of tin or sheet iron, shown in figure 2. When the box is filled with coffee, a single movement of the slide will let the required quantity down into the mill. The distance between the two arms of the slide is ascertained by placing the proper quantity of coffee in the box, and marking the hight at which it stands, and making the slot for the slide to work in at that place. The rest is shown by the engraving.

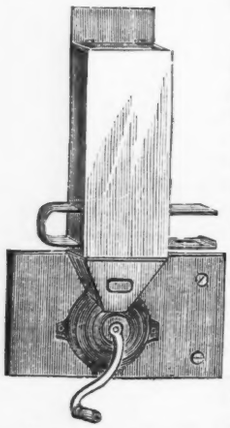


Fig. 1.—COFFEE MILL "ANNEX."

Fig. 2.—THE "SHUT OFF," OR SLIDE.

A Hammock for the Baby.

There is no reason why a small child should not enjoy the comfort which a hammock gives to older persons during the hot weather of mid-summer. So thought Mrs. "M.," Carroll Co., Md., when she made a bag hammock in the following manner: For the ends two pieces of inch pine boards, about 18 inches long and 8 inches wide, were rounded upon one edge, as shown in the engraving. The two side pieces, 3 feet long, were made of inch material, and their ends fastened to the upper corners of the end pieces. Strong cloth—sacking, canvas, etc.,—was tacked securely around the frame, and a rope fastened to holes in the end pieces, by means of which the hammock was hung up ready for use.

A CHEAP BABY HAMMOCK.

Maggots and Moths.—Maggots in hams, and moths in clothing, can only occur when the parent insects can deposit their eggs in them. Actual exclusion will preserve either from their attacks. Wrapping the hams in paper, putting in a barrel or box, and covering with wood ashes, will keep out the Bacon Beetle. So with woolens and furs. Whatever package is so tight, as to effectually exclude the moth, which, by the way, can pass through a very small crevice, will preserve the contents. A tight box, with paper pasted over every joint and crack, will answer. A whiskey-barrel is sometimes used—there is no special value in the whiskey, but such a barrel is quite sure to be tight.

Home Topics.

BY FAITH ROCHESTER.

The Children's Feet.

Is the Chinese system of treating feminine feet likely to come into practice in America? Last week a seven-year-old neighbor of mine stayed at home from school a few days because her corns, the result of tight shoes, hurt her so she could hardly walk. Another little neighbor suffers so from her tight shoes that she can hardly limp to and from school, and suffers continually as she sits in the school-room. Another one still (all three less than ten years old), offered me a cure for bunions the other day (lemon juice, if I remember rightly), saying that she had bunions because "the last pair of shoes before these" were too tight, and always hurt her feet. The snuggest possible fit seems to be the rule by which parents now go in getting little girls shoes, and the children seem to take it as a matter of course that they should suffer in "breaking-in" a new pair of shoes—very needless suffering, if the shoes are not really too tight, or the feet injured by previous tight shoes. One of the little girls, mentioned above, said that the shoe-dealer told her father not to take off the shoes if they did hurt her at first; the shoes would stretch after a while. One day she was walking home from school as slowly as possible, under an umbrella, in the rain, hoping that the wet grass would cause her shoes to stretch so as to be comfortable. Is it not a most barbarous idea to use a child's soft, growing feet, as lasts upon which to *stretch* leather?

Pathology is taught in our public schools now, and this is one of the lessons my boy heard,—that "going barefoot in childhood causes the feet to grow of an *unnatural* shape!" The other day I came across this testimony from a person who had spent many years in the Indian Territory: "I have never seen a boot or shoe on one of these Indians. Instead of having large, ill-shapen feet in consequence of leaving them free and easy, their feet are models, being small, straight, and slim, and, of course, innocent of corns and bunions." It is not very long since it was supposed that Nature could not be trusted to develope a female waist properly. Indeed we have not yet emerged from those dark ages. Last night a little girl, 13 or 14 years of age, was playing by our gate, who already wears corsets. Once they were put upon girls much younger, in the hope that the waist would remain so small, as the child grew tall, that it would never "have to be" reduced in size by tight lacing after she grew up. And the people who committed these outrages upon their poor children did not consider themselves heathens, as one might suppose. Did you never think what insults human beings offer to the Creator when they injure or alter the human form with the idea that they can improve upon its beauty as God planned it?

None but the Chinese themselves admire the deformed feet of Chinese "ladies." To them the horrible stumps upon which their women hobble about seem decided improvements upon Nature. The feet are bandaged when the girls are very young, and at first the victims suffer very greatly, but after a long continuance of the outrage, the sense becomes deadened, and the suffering gradually ceases as Nature gives up the struggle.

Feminine Vanity.—I am quite unwilling that all these "reforms against Nature," or processes of deforming the female body should be attributed solely to the vanity of women. The fathers fit the shoes to their little girls, as far as my observation goes, and male journalists publish as one of the most important bits of news about a woman who attracts the public gaze, for her beauty and fine dress, the wonderful smallness of her foot, and the number of shoe she wears. "Number two" was the size of shoe worn by the full-grown wife of a prominent man in Washington a few years ago—a woman who dressed magnificently, and whose "beauty" was much talked about. I perceive that we shall have quite a crop of "number two" women within the next dozen years or so. The injury done to the feet of these girls is very small compared with the injury done to their minds. The heart and intellect are dwarfed along with the feet or waist thus sacrificed on the altar of vanity. What kind of religion is the child thus taught? How will she reverence God, and what obedience will her life render to His laws?

In the best daily paper in our vicinity, a newspaper excellent in some respects, we are treated in every Sunday Supplement to a few columns of "What women want to know." I never see that heading there, without shame and a sense of insult. The tendency of most that finds its way there is to cultivate the silliest feminine vanity. Regular fashion books are much less harmful. I always look it over carefully, because I am anxious to know what young women are being brought up on, and what men are thus told that women "want to know." Besides, all that it contains is not objectionable. There we have, in man's own paper, reports of parties and society doings, in which accounts of the toilets of the ladies present are the chief items of information given, and these are spoken of as though it is a most commendable thing in the ladies to "vie with each other" in richness and beauty of toilet, and as though this is the principal function of woman in "society." These things seem to be written chiefly by men, and the fine toilets are sought and worn as much to please men as for any other reason—to gratify the vanity of husbands and to attract admirers and lovers. If men really disapprove of extravagant and senseless feminine toilets, they can easily frown them down.

Trouble with Ironing.

A correspondent complains that she cannot make her white starched clothes, particularly the shirt bosoms and collars, look bright and clear and glossy. She is sure she washes them clean, and hangs them to dry turned wrong side out, but when they are ironed, they have a dingy look. Perhaps she does not keep her irons clean. This fault is not uncommon. It is well to wash the irons all over carefully once in a while, before they

are quite cool and are put away. Starch that sticks to them burns on, and soils the clothes. Beeswax is often recommended for cleaning the irons when starch sticks to them. I usually have a little salt on a paper on my ironing table, and rub my iron on this whenever the starch sticks. Various things put in the starch, when cooking, or while hot, as spermaceti, starch gelatine, lard, tallow, butter, and others, prevent the starch from sticking to the iron. At present I use a very little powdered borax and a bit of nice beef tallow. The borax seems to add both stiffness and gloss, and suits me (with the tallow) as well as anything I have tried. A little clean grease of some kind prevents stickiness. Of course the starch must be well boiled. In making it, the starch is first stirred smooth in cold water, and then either turned slowly into *boiling* water, or boiling water turned slowly into it, stirring briskly all the time in either case, until the starch turns from a dead white color to a bluish *clearness*. The old rule for each shirt bosom, with collar and wristbands, was two even teaspoonfuls of dry starch. A little less will do when gelatine, or borax, or gum arabic water is added to the starch. Rub the starch into the garment well, and examine it before ironing. If lumps of starch are seen, rub them off with a damp cloth. There should be no lumps in the starch when used, and if you cannot make it and use it without lumpiness, or a thick scum over it, strain it through a starch-bag before using. It is always safest to lay a thin cloth over a bosom or collar when you first put the hot iron upon it. Go over it once so, then remove it, and iron directly upon its linen. By this precaution you discover the state of your irons, whether too hot or soiled, and sometimes prevent disaster. You should however always test your iron on a cloth used for the purpose. In ironing garments with cold starch, *always* begin with a clean cloth laid over the linen. Ironing hard with an iron not too hot, after the linen is pressed smooth, adds polish, but no common iron can do this like a regular polishing iron.

A Door Fender for Children.

Mr. F. J. Hunter, Washington, D. C., writes: "I take the liberty of sending you a description of an article as made by me, and now in use at my house. It is a frame-work

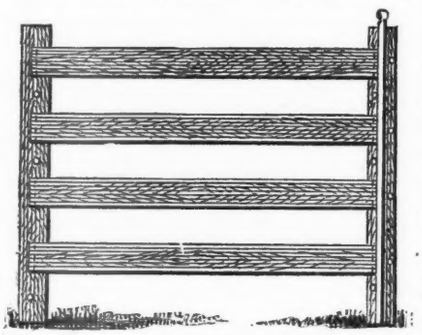


Fig. 1.—A DOOR FENDER OR GUARD.

to place between the jambs of a door frame to prevent small children from crawling out of the room. It is made in the form of bars, and is much neater than the solid board. Its construction can be readily understood after a moment's inspection. The material is of white pine $^1/_2$ inch thick. The bars, as seen in figure 1, are two inches wide, and the space between them is two inches. On one jamb of the door frame is fastened a piece two inches wide and mortised, as shown in figure 2, *a*. The piece on the other jamb is more difficult to make. First a piece, *b*, is made and fastened to the jamb, then the piece, *d*, is made and fastened to the jamb one-half inch from *b*, leaving room for the piece, *c*, to slide be-

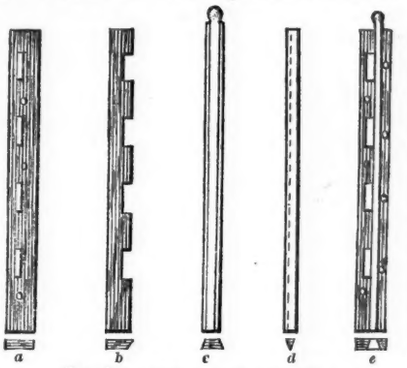


Fig. 2.—PARTS OF THE FENDER.

tween them; the piece, *c*, is bevelled on both edges—the pieces *b*, and *d*, on the inside edge only. In putting the slats or bars in position, one end is first placed in the bottom hole in *a*, then raise the other end and slide it down between *b* and *d*, to its proper notch, and so on until each bar is in its place, then slide the piece, *c*, down through the dove-tail opening between *b*, and *d*, and the 'fence' is complete."—The engravings given herewith are made from the sketches that accompanied Mr. Hunter's contribution.

Household Notes and Queries.

CURDS AND WHEY.—This is a most acceptable dessert at any time, but especially in summer, when the ease with which it is prepared is greatly in its favor. It is not only agreeable but wholesome, which may not be said of all desserts, and children may partake of it freely. It is simply milk curdled by the use of Liquid Rennet; and is eaten with sugar or sugar and cream. Add to it jelly or stewed fruit of some kind, and it forms what is called in some localities "Junket," a delicious combination deserving a more pleasing name. Directions accompany the Liquid Rennet; usually two teaspoonfuls to a pint of slightly warmed milk; the curd will be formed in a few minutes. One who has the rennet in the house is always prepared to furnish a choice dessert at a short notice. In the absence of liquid rennet, a piece of the rennet, salted and dried for cheese making, may be used, soaking a fragment in a little warm water and adding the liquid to the milk. The quality varies so that, as in cheese making, the size can only be learned by experiment. The same piece may be dried and used again several times over.

LIQUID RENNET.—In view of the fact that this is seldom kept in the country stores, Mrs. S. M., Crawford Co., Wis., and others would like to know how to prepare it. The following is from a source that we have found to be generally reliable. The stomach of a calf is cleaned, and all fat and other extraneous matter removed as for drying. It is then cut small and weighed, well rubbed and kneaded with one-fourth its weight of salt, and allowed to stand, the recipe says five or six weeks, though we have no doubt that a much less time will answer. Water is then added, an ounce and a half to each ounce of rennet, and to each pint of water used, two ounces of rum, brandy, or other liquor; as the spirits are only to preserve it, half as much alcohol will answer quite as well. Let stand for 24 hours and strain through fine muslin; keep in small, well corked bottles in a cool place. Two or three teaspoonfuls should curdle a quart of milk, but rennets vary so much that a trial must decide the quantity.

FRUIT STAINS. — Napkins, table cloths, handkerchiefs, and other linens indicate that the season of fruits is at hand. The careful housewife will never allow these stained articles go into the wash without first discharging the stain, as the soap will set the color and make it all the more difficult to remove afterwards. Some stains will yield to boiling water, if applied at once. Many for their complete removal require a bleaching liquid. "Javelle Water," sold by druggists, is the best preparation of the kind, but a solution of Chloride of Lime answers nearly as well. Put a quarter of a pound of fresh Choride of Lime into a quart jar, add a little water, and stir with a stick until all the lumps are broken and a smooth mixture made; fill up the jar with water and set aside. The next day, or when the liquid is perfectly clear, pour off from the dregs and keep in well stopped bottles in a dark, cool place. Wetting fruit stains with this will usually discharge them at once. Never allow this liquid to dry on the fabric, and never put soap upon it, until it has first been thoroughly rinsed in clear water.

RASPBERRY VINEGAR.—In these hot days a little raspberry vinegar added to a glass of cold water, makes a most refreshing drink. When raspberries are abundant is the time to provide a supply, and the wild berries are quite as good as any—if not the best. One of the simplest methods is, to place the berries in a jar and cover with the best cider vinegar; set in a cool place, and the next day add as many more raspberries as the vinegar will cover. The next day set the jar in a pan or kettle of cold water, and gradually heat the water to boiling. If a glass jar is used, some sticks must be placed between it and the kettle. When the berries are scalded through, strain, and for every pint and a half of juice add a pound of sugar, heat to the boiling point in a porcelain kettle, remove the scum as it forms, and when the "vinegar" is cool, bottle and cork securely.

A Cream Warmer.—Mr. Wm. Alexander, Louisville, N. Y., sends a description of a Cream Warmer, and a sketch from which the accompanying engraving is made. It consists of a tin vessel 3¼ feet long, with the lower portion 6 inches wide and 15 inches high, the upper part being prolonged into a tube. This is to be filled with hot water and put into the churn with the cream, and then occasionally moved until the cream is of the right temperature for churning. It saves warming the milk on the stove in pans, and can be made at any country tin-shop for about a dollar, and will last for many years.

A CREAM WARMER.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

The nearness of the 4th of July has reminded one of our friends of Fireworks. He is not a boy now, but remembering how much he wished when he was young to know something about fireworks, he thinks that other boys, and perhaps some girls, may have the same desire, and he asks me to tell you how fireworks are made. He admits that in asking for you he writes also for himself, for he says: "If any one should ask me how a Rocket or a Roman Candle was made, I should have to say, I don't know." In "talking" a little about

How Fireworks are Made,

I do not intend to teach you how to make fireworks. As much as I enjoy fireworks, I wish we would celebrate our great holiday without them; but we cannot prevent the burning of powder, and all that we can do is to see that nothing else is burned on account of it. Boys should not undertake to make fireworks; besides the great danger, they will not succeed in making good ones, as it is an art to be learned only by much practice. Proper fireworks are of two kinds: those burned for their color or other pleasing light, and those which produce motion as well as light. The chief thing used in this second class—those that have some *go* in them, is gunpowder, or the materials of which that is made, hence we must first ask:

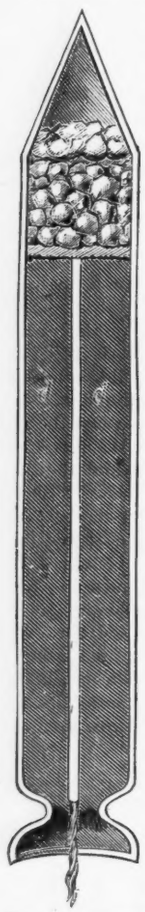


Fig. 1.—SECTION OF ROCKET.

What Is Gunpowder?

A boy very early knows how it looks, and soon learns that it is made of Charcoal, Sulphur, and Nitre (or Saltpeter). These are ground very fine, separately, put together with water to form a sort of dough, which is ground and mixed in mills; after this mass is dried, it is broken up into grains, the different sizes being separated by sieves. Youngsters soon learn that when gunpowder is lighted it goes off with a flash, leaving behind very little that can be seen. If fired in a gun, it goes off with a bang, and if the gun has a ball, or some shot in it, those are sent to a great distance. What becomes of the powder, and why does it throw the ball with such force? I can not tell *all* about this without going into chemistry, but it is enough to say that gunpowder is a solid, and that in burning, almost all of it is turned into a gas, invisible, like the air. This gas takes up about 1,500 times as much room as the powder itself did; it can not be held in a little place like the gun-barrel, but must have room, so it gets out, and the ball being in the way, that is pushed out very suddenly. One of the commonest kinds of fireworks is the Rocket, or as youngsters often call them "Sky Rockets," which go up in the air with a great rush. You no doubt have wondered

What Makes the Rocket Go Up?

The same force that sends the ball from the gun, that from the burning of the gunpowder, sends the rocket skyward. If the rocket were filled with gunpowder, such as we use in a gun, and touched off, it would not go up at all; it would *go*, but in every direction. The gunpowder burns altogether too fast, it must be "tamed," so to speak, to be used in the rocket. You know that ordinary powder is in grains of various sizes; when it is ground as fine as flour, and then fired, it burns much more slowly; nearly all the gunpowder used in fireworks is first ground fine to make what the firework makers call "meal powder," or what is the same thing, the Charcoal, Sulphur, and Nitre, are made into fine powder and mixed without first making them into grains. This is the material that is used in rockets, and is merely a slow-burning gunpowder, packed in a heavy paper tube called a "case." The rocket-cases are made by pasting brown paper, layer upon layer, using a round stick for a mold; the larger the rocket the thicker the case. If you examine a rocket case you will find that it has a sort of neck at the bottom, and that the opening is very narrow; while the case is still wet, a strong cord is put around it near the end and drawn so as to "choke" it, as it is called, or make a neck there. When the case is dry it is ready to be filled with the mixture or powder just mentioned. The case is not filled solid, but there is a channel running through the whole length. If a rocket were cut open lengthwise, it would appear as in figure 1, which shows the "choke" below, and the channel in the center. The fine flight of the Rocket depends upon the proper filling, and it requires much practice to do it well. The case is put upon a stand, which has an iron rod that passes up through its center, some of the powder is put in, and a rammer, a wooden plug of the right size, having a hole to admit the rod, is put in, and struck several smart blows with a mallet; more powder is put in and driven down as before, and so on until the case is filled. The rod will leave a hole through the center of the filling. Some very large rockets are filled solid, and this hole afterwards bored out. You know that when a rocket gets up, there is usually an explosion, and stars, serpents, etc., appear and fall downwards. These are put in the top of the rocket, as seen in figure 1. When the case is nearly filled with the powder, a layer of clay is rammed in, which finishes the rocket proper. These added things are called the "garniture" of the rocket. A pasteboard cap is attached to the top of the case, a hole bored through the clay, and the stars, etc. (which will be described presently), are put in

2. INTERIOR OF A ROMAN CANDLE.

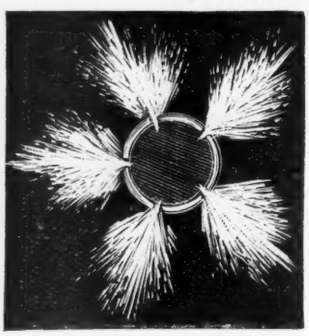


Fig. 3.—A FLAMING STAR.

with some loose powder, a wad of cotton holds them in place, and the whole finished by a pointed top. At the lower end a fuse is put in to touch it off. The rocket is now finished, all but the stick; it could not fly well without this, any more than a kite could go without a tail, and the stick serves, just as a tail does to a kite—to balance it.

About the Upward Flight.

I stated that powder in burning formed a gas 1,500 times more bulky than the powder itself. When powder is fired in a gun, the gun "kicks"; the gas pushes the ball out at the muzzle, and at the same time pushes the gun back against the shoulder, as many know to their sorrow. The powder in the rocket burns more slowly than that in a gun, and there is a great rush of gas from its lower end, which lasts for some seconds; this gas, acting with great force against the air, pushes the rocket upwards. When the fire reaches the clay partition at the top of the case, the loose powder in the cap takes fire, bursts the cap and scatters the stars which catch fire and burn as they fall. Next to the rocket, perhaps the most popular of all our common fireworks is

The Roman Candle.

This you know, is much like a rocket without a stick, with a fuse at the top. When this is set upright by fixing it in a hole in a board or otherwise, and the fuse lighted, there will first be a blowing off of sparks; in a few seconds, a pop—and up will go a beautiful star quite high in the air, then more sparks—another star with a pop—and so on for a number of stars—a dozen in large candles. Figure 2, shows a section lengthwise of a Roman Candle. At the bottom is some of the same powder, or much like that with which rockets are filled; next a little gunpowder, and upon this a star, above this a layer of the powder, then gunpowder and another star, and so on to the top where there is some of the powder and a fuse. The case is made by pasting layers of paper over one another, as in the rocket case, but it need not be so strong, and is not "choked." The stars are the principal things in the Roman Candle. These are of Nitre, Sulphur, and fine Gunpowder, made into a paste or dough with gum water, or a kind of varnish. This paste is molded in a cylinder, and cut off in pieces to form thick disks, which have a small hole made in the middle and are then dried. In making stars for rockets, the mass is not molded, but cut up into small lumps. The stars are made to give a colored light by adding some material to the paste; for green, a mineral called Baryta is used; the beautiful red light is made by using Strontia, another rare mineral, and other colors by different substances and mixtures. When the fuse of the Roman Candle is lighted, the powder burns, sets the top star on fire and at the same time the fire through the hole in the centre of the star reaches the gunpowder below, which explodes and sends the star upward as if it were a bullet, and so the flight of stars goes on one after another. But I can not now tell you about the wheels and great show pieces. Some of the larger pieces are very beautiful, but are very simple as compared with the rocket. Flaming stars are often used in these. A short case is filled with a mixture, much like that used for rockets; five holes are bored at equal distances near the bottom of the case, and a fuse so arranged that the mixture will be fired at all the holes at once; the fire blowing from these holes produces the effect of a flaming star as in figure 3. Other beautiful things in fireworks are made in an equally simple manner. I may at another time tell a few more things about fireworks, but I think I have shown you that it will be a waste of time and money for you to undertake to make them yourselves.

THE DOCTOR.

Our Puzzle-Box.

DECAPITATIONS.

1. Behead a house and leave the rent.
2. Behead a house and leave a molding.
3. Behead to cut, and leave the top of a hill.
4. Behead a bodkin, and leave a fish.
5. Behead to pierce, and leave a scar.
6. Behead a flock and leave a fish basket.

HENRY ALICE DONOGH.

BIBLICAL WORDS SQUARE.

1. A wilderness where David concealed himself.
2. A measure of surface.
3. A prince of Midian.
4. A mountain which overlooked the promised land.

ISOLA.

DEFINITIONS.

(See explanation in the June number of the *American Agriculturist.*)

1. A misty spot in the sky composed of innumerable stars.
2. A type, emblem, or representation.
3. One who grants a lease.
4. To match, to compete with.
5. Evaporating quickly, lively.
6. Desolate, valueless, wild.
7. A small insect.
8. Mingled or associated with.

NUMERICAL ENIGMA.

I am composed of 20 letters:
My 4, 3, 17, 16, 8, 9, 13, is a pleasant greeting.
My 11, 12, 13, 14, is an expression of feeling.
My 6, 7, 8, 9, is part of a house.
My 1, 2, 20, 19, is a girl's name.
My 16, 17, 18, 4, is a ball of thread.
My 5, 19, 10, 15, is a fish.
My whole is an old proverb. BELLA C. C.

FOUNDATION WORD.—"Misdemeanor."

(*Explanation.*—All the letters of the foundation word are used in each sentence: the number of stars indicate how many letters are used in each word left blank. *Example:* I often indulge in pleasant dreams *** ******** [and memories].)

1. There were **** ******* at the party, than young men.
2. Do young ladies frizz their hair ** that *** may ****** them?
3. I often ***** that I am ** **** strange place.
4. My *** received a **** for holding the ****.
5. Send one **** *** to this **** of the house.
6. I did not know whether the bonnet was ****, ** whether it belonged to one of the *****.
7. It makes ** *** to be told that * *****.

ENIGMATICAL STORY.

12, 5, 3, was a very nice little boy, about 4, 10, 13, 7, years old. He went to London with his parents, and thought it very funny that they should hire a "11, 14, 15," to take them to the 2, 5, 8, 3, 14. He saw many amusing things in London, but he wanted to return to his home in America. The 1, 7, 6, 8, 9 was, he was anxious to get back for 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15.

Answers to Puzzles in the May Number.

PLACES IN ASIA CONCEALED.—1. Tocat. 2. Lucknow. 3. Cashmere. 4. Aden. 5. Canton. 6. Singan.

CROSS-WORD.—Unimpeachable.

CONUNDRUMS BASED ON "WORD-MAKING."—1. Bears into zebras. 2. You could make a *boy obey*.

EASY NUMERICAL ENIGMA.—Jesus wept.

ANAGRAMS.—1. Diagnosis. 2. Nourishment. 3. Stalactites. 4. Upalloyed. 5. Benighted. 6. Inebriated. 7. Namesake. 8. Violinists. 9. Sacrilegious. 10. Superabundance.

SQUARE WORD:	SCATTERED SQUARE:
SHOP	WITS
HOPE	IRON
OPEN	TOGA
PENT	SNAP

CHANGED HEADS.—1. Fear. 2. Dear. 3. Mear. 4. Lear. 5. Pear. 6. Year. 7. Bear. 8. Near. 9. Sear. 10. Hear. 11. Tear. 12. Gear. 13. Wear. 14. Rear.

DOUBLE ACROSTIC.

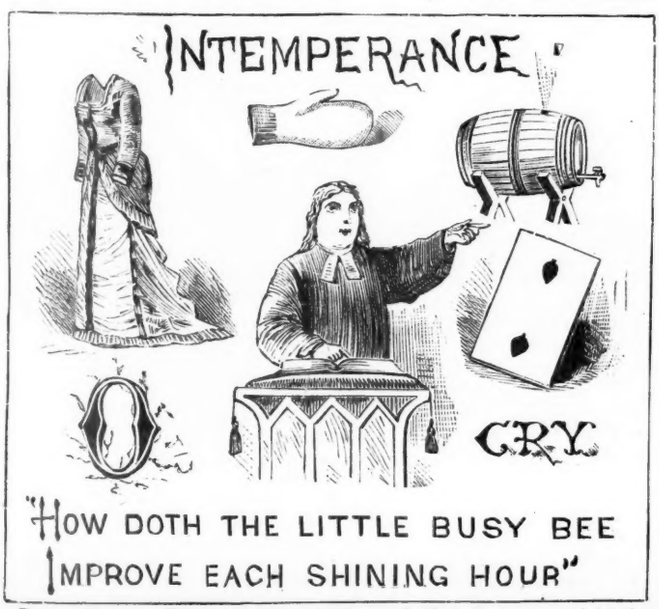
	S—	piri	—T
	L—	aure	—L
	A—	ntisci	—I
	I—	ntom	—B
Celestials	T—	riumphe	—R
	S—	pher	—E
	E—	ternalize	—D
	L—	ycoperdo	—N
	E—	ph	—A
	C—	la	—V

Vanderbilt.

CURTAILMENTS.—Ranger, range. 2. Rate, rat. 3. Rage, rag. 4. Pine, pin. 5. Tripe, trip.

CHARADE.—Ambush.

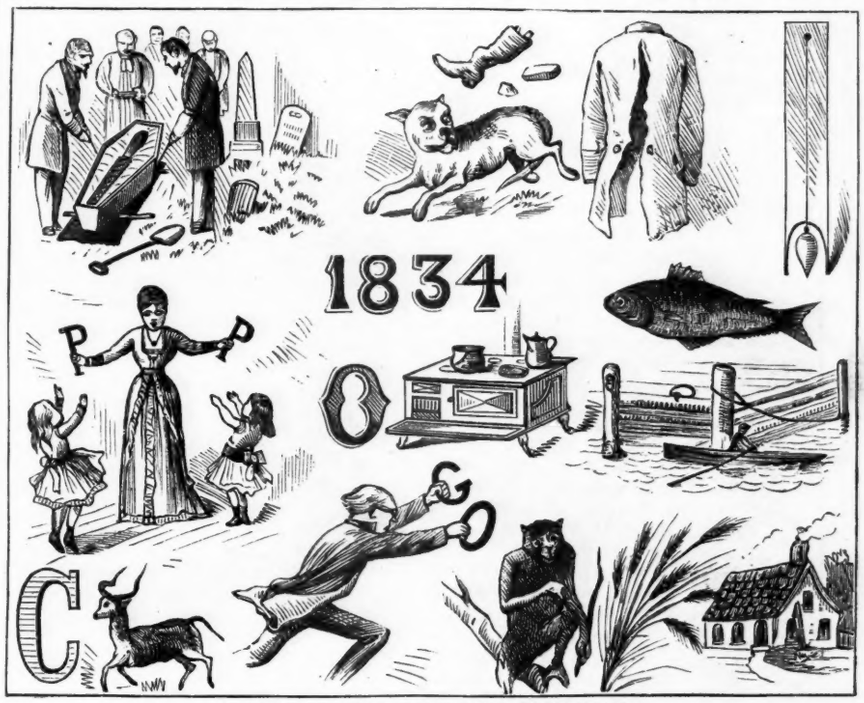
PI.—If a man can be happy and contented in his own company, he will generally be good company for others.



PREFIX PUZZLE.—Prefix two letters to the words that are represented by the designs in the engraving given above, and make nine different words.

A Dish of Fruits.

Some months ago, we had a "Mixed Bed of Flowers," and now we will sit down to a "Dish of Fruits." We seldom object, and I believe it is the same with children, to having fruits occasionally. Some of the fruits before us grow in the Temperate Zone, while others are tropical in their way of living. The first one that we will try, is an oval, smooth-skinned fruit, with a large hard centre. The color varies from a dark purple in some varieties to a light green in others. This is a fruit that is much troubled by an insect that pierces the surface with its little beak while the fruit is still quite young. No. 2, grows in long slender clusters upon low brushes, and is very sour; for this reason it is well adapted for making the finest kind of jelly. There are red, white, and black varieties of this fruit, but the red and white are the most commonly met with. No. 3 is a tropical fruit that comes to us in large, sticky masses, enclosed in a basket-like cover. The outside of the fruit is rich and much enjoyed by many. It encloses a hard seed. No. 4 is one of the most widely known fruits of all the list. It is produced upon trees which, when they flower, are very fragrant. Their shape is almost that of a sphere, of the size of a base ball. It has a thick leathery skin of a color peculiar to itself. We have never seen a child who dislikes the taste of the juicy interior. Closely related to this, is No. 5, although it is a little less rich in flavor. It is also a tropical fruit, requiring a climate much warmer than that of New York for its production. No. 6. This is a fruit from a wide spreading tree, which grows in the East and West Indies. The fruit is egg-shaped, about three inches long, and often weighs two pounds. It is orange-colored when ripe, and has a rich pulp between the thick skin, and stone in the center. No. 7. This fruit grows on bushes, hanging in clusters from the long branches. It has a sharp acid taste and is not very largely used in the fresh or raw state, but when cooked or made into a jam this fruit is liked by many. The bushes are seldom cultivated, they being already too common along the fences and hedge rows, especially in the older parts of the United States. No. 8 is one of our leading fruits, and so important is it that should the crop fail, as it does sometimes, it would leave many people without a source of income. It has a large stone which is ridged or groved upon the outside. The pulp is very rich and the bloom or blush is of the most pleasing color. No. 9 is much like the preceding, but less common, it is somewhat early, and to many has a very rich and highly prized flavor. The last to be taken from the dish is one of the "small fruits," and is common to most boys and girls. The shape of the fruit is something like a small cap, not far from the size of the end of a person's little finger.



A PECULIAR DISH OF TROPICAL AND OTHER FRUIT.

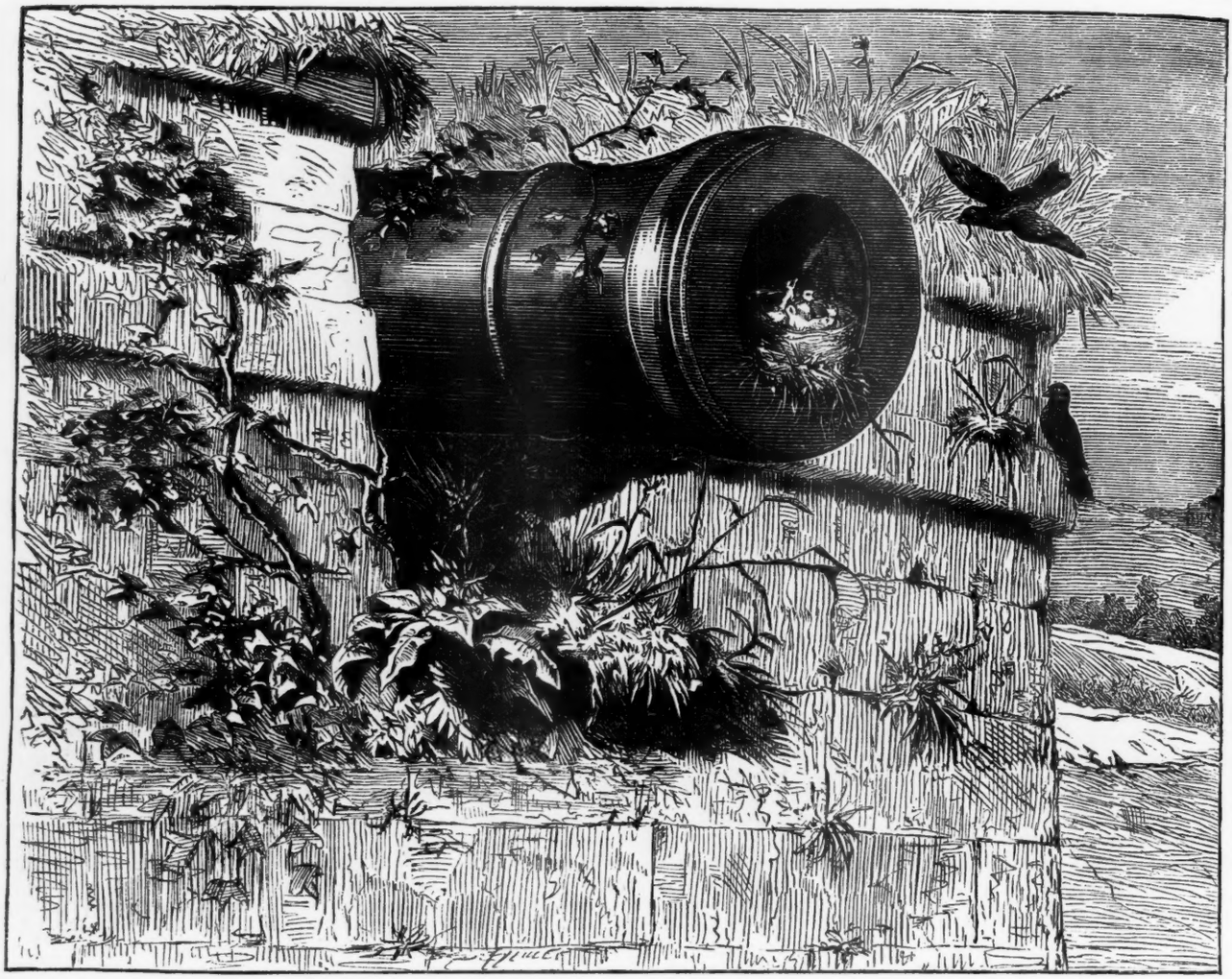
The Doctor's Correspondence.

Usually at this season, the letters from my young friends are about plants, insects, and other natural objects, that come with the spring. Can it be due to the general backwardness of the season that my correspondents, as a general thing, ask about matters that are not especially spring-like? For example, Simon S. M., Garrett Co., Md., asks me to

Describe the Boomerang;

he has read that the native Australians use it with wonderful skill, and says that he "never could get any satisfactory information about it." It appears that various tribes of Indians have "throwing sticks" of different kinds, though mainly used in playing games; those used by the native tribes of Australia, the boomerangs, serve as weapons in war, and also in hunting. While made upon the same general model, those of the different

TWO FORMS OF THE BOOMERANG.



AN OLD CANNON MUZZLE SERVING AS A HOME FOR A FAMILY OF BIRDS.

tribes vary considerably in shape, as the engravings of two of the most unlike forms show. The boomerang is made from some very hard wood, and is about two feet long, two and a half inches wide, and about a third of an inch thick. Those that I have seen have been cut from a piece where the branches join in order to give the needed curve.

In Throwing the Boomerang

it is held by one end and thrown as if to hit an object about 30 feet in front of the thrower; instead of going forward, the boomerang rises in the air, changes its course, and finally reaches the ground or an object at some distance *behind* the thrower. So skillful are the natives of Australia said to be with this curious arm, that they will hit birds and small quadrupeds that are at some distance behind them. It is not likely that the boomerang can ever become with civilized people anything more than a curiosity....Miss Lizzie has

Trouble with her Aquarium,

and writes that whether soft or hard water be used "it quickly assumes a greenish or muddy tinge." I think if Miss Lizzie examines closely she will find that the water itself is as clear as ever, but that the appearance is owing to a film that gathers upon the glass. This substance a powerful microscope would show to be made up of vast numbers of exceedingly minute simple plants. While it greatly injures the appearance of the aquarium, and prevents seeing what is going on inside, it does no hurt to the water or the contents. Snails will generally remove the film, and are kept in aquariums for this use, or the inside of the glass may be occasionally rubbed with a sponge tied to a stick. I will add that Miss Lizzie can do nothing about the grape vines now. Ask next September....Fred. W. J. writes, that there has been among his schoolmates

A Discussion About Ghosts.

And asks, "what causes that light in boggy places called 'Will o' the Wisp,' and which some believe to be Ghosts?" Whatever the light may be, we may be very sure that it is not made by ghosts. But did Master Fred ever see the light? It is something that I have all my life wished to see, but I never saw it, and more than that, I never met with any one who ever did see it. European books speak of it, but I have seen no account by a person who had witnessed it himself. One story states that a century or more ago a person lighted a piece of paper at one of these flames. The usual explanation is, that the light is caused by some gas containing phosphorus, but chemists have not succeeded in producing the "Will o' the Wisp" artificially, and the whole matter is surrounded by doubt. It is most frequently called in the books *ignis fatuus*, the Latin for a "vain" or "foolish fire," as persons are said to have been lost by following it, and being led into bogs, etc.

The Cannon in Time of Peace.

What is more sad to see than a fort destroyed! I hope you may not be called upon to look at such a sight; and still more, I trust that the boys that read these lines may not find a time in the future when duty calls them to form in straight lines and under the leadership of some chosen man, march to war. It is sincerely hoped that the girls of today may not be the wives and mothers of those who must go out to fight for their homes and for their liberty. We have had severe wars in the past, and your fathers and grandfathers can tell you thrilling events that have occurred less than twenty years ago, when all this land, bright and beautiful as it is to-day, was covered with a dark cloud of a long and bloody civil war.

The engraving here given, is one which teaches the lesson of the beauty of peace in contrast with the terrible strength and ruggedness of things that are made for the purposes of war. There is the side of the earth works thrown up for the protection of men, armed and ready to take the lives of their contending foe. The cannon is still in place, but has long been unheard through the land as a terrible instrument of war. Its loud voice is still, and shot and shell are no longer hurled on messages of death. Instead of all this, a pair of little birds have found a home within the great iron muzzle, and there are raising a nest full of little ones. All the noise of the old gun is now the music of the peace-loving birds, and the protection which it gives is not for the lives and homes of contending men, but it simply serves as the safe habitation of a happy household of harmless birds. All will enjoy the picture. To the old, it will call up sad and touching memories, and happy thoughts of our present peaceful state. To the young, for which it is especially designed, the picture will tell a pleasing story of how great things can serve a good purpose for small uses; how, in times of peace, the instruments of war and devastation can promote the well-being of even little birds, by providing for them a comfortable home. UNCLE HAL.

WHEAT FERTILIZERS.

Attention is called to the advertisement in this issue of "Wheat Fertilizers," by the Brown Chemical Co. of Baltimore, an old and reliable firm, who, after having spent a half century in the chemical business, are concentrating all their efforts on Powell's Prepared Chemicals for composting or manufacturing fertilizers at home. The Powell's Prepared Chemicals, as proved by the high references offered by the manufacturers, have been remarkably successful as cheap and reliable fertilizing agents. The pamphlet describing the Powell's Prepared Chemicals, giving analyses of bones, etc., with handsome colored plates of different plants, issued by the Company, is before us. It is worthy of a perusal. All farmers can get one free by application, as directed in the advertisement.

An Organ with Twenty Stops for $65

Is offered by those famous Organ builders Messrs. Marchal & Smith, New York City. They have just perfected a remarkable organ with twenty stops, which is destined to be the leading instrument for years to come. Continuing the policy which they have made so popular, they offer their organ at a price which must bring them orders from every part of the country, and secure an immense sale.

All good articles are imitated and Higgin's English Salt is no exception. Several brands of so-called sifted salt are now offered, but grinding up panscale and then sifting it with the salt is not the Higgins Process by a great deal.

Attention is directed to the artistic and desirable articles in rustic work, advertised on our 2nd cover page, by the Rustic Manufacturing Co. of New York.

Now that the hot weather is upon us, most people are considering how they can sleep comfortably at home, in the country, or at the sea-side. Mr. Hermon W. Ladd, of Boston, calls attention through our advertising columns to his "XX COT," a perfect bed; no mattress or pillows; better than a hammock, as one can lay straight, and it fits the body pleasantly; just the thing for Hotels, Offices, Cottages, Camp-meetings. Splendid for invalids and children. Price, only $2.00.

Buying shoes for children's wear with the A. S. T. Co. Black Tip upon them means just this: shoe bills reduced one-half, and perfect at the toe until the shoe is worn out. Parents can prove this by giving them a trial. Trade-mark A.S.T.Co **on front of every Tip,**

THE FARMER'S WATCH.

The best and most reliable Timepiece ever offered by a first-class house. A perfect Timekeeper, Stem Winder and Stem Setter. Solid German Silver Open Face Case, nickel plated in the best manner. This is not a "*Cheap Watch*" but the best made for the money. Circular free. By express, $10. J. S. Birch & Co., 38 Dey St., N.Y.

TO KEEP IT SWEET **CIDER** or prevent *Secondary* FERMENTATION.

USE

IMPROVED PRESERVING POWDER

It does not impair the taste or flavor, is thoroughly reliable and *absolutely harmless to the human system.*

SEND 35 cts. for a sample, forwarded free; sufficient for 40 gallons. One pound, sufficient for 8 Bbls., $1.50, receiver to pay charges, or $1.80 by mail, prepaid. Price lower in larger quantities.

W. ZINSSER & CO., 197 William St., New York.

INVALID ROLLING CHAIR.

(RECLINING)

A Priceless boon to those who are unable to walk. Hon. A. H. Stephens, M. C., and hundreds of others use them. Send for Circular to

FOLDING CHAIR CO., New Haven, Conn.

JOSEPH GILLOTT'S STEEL PENS

SOLD BY ALL DEALERS THROUGHOUT THE WORLD.

GOLD MEDAL PARIS EXPOSITION-1878.

H.W.JOHNS' ASBESTOS LIQUID PAINTS

ROOFING, BOILER COVERINGS,

Steam Packings, Mill Board, Gaskets, Sheathings, Fire-proof Coatings, Cements, &c.

SEND FOR DESCRIPTIVE PRICE-LISTS.

H. W. Johns M'f'g Co., 87 Maiden Lane, N. Y.

Bookwalter Engine.

Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., at the low price of

3	Horse-Power	$240.00
4½	" "	280.00
6½	" "	355.00
8½	" "	440.00

Put on Cars at Springfield, Ohio.

JAMES LEFFEL & CO.,

Springfield, Ohio,

or 110 Liberty St., New York City.

DO YOUR OWN PRINTING

Presses and outfits from $3 to $500 Over 2,000 styles of type. Catalogue and reduced price list free.

H. HOOVER, Phila., Pa.

COLUMBIA BICYCLE.

The Bicycle, as a permanent, practical road-vehicle, is an acknowledged fact, and the thousands in daily use are constantly increasing in numbers. It combines speed and endurance that no horse can equal, and for pleasure or health is far superior to any other out-door sport. The art of riding is easily acquired, and the exercise is recommended by the medical profession as a means of renewing health and strength, as it brings into action almost every muscle of the body. Send 3c. stamp for 24-page illustrated catalogue, containing price-lists and full information.

THE POPE M'F'G CO., No. 597 Washington St., Boston, Mass.

XX COT (not painted, White Duck) $2.

Painted Red, Brown Canvas and Fancy Bolster, $3.00.
SOLD FOLDED
XX CANVAS COT
32 IN WIDE
WEIGHT 12 LBS.
MEAS ½ CUB. FT.
Painted Red, Striped Canvas and Fancy Bolster, $3.00.

Makes a perfect bed. No mattress or pillows required. Better than a hammock, as it fits the body as pleasantly, and lies *straight*. Folded or opened instantly. Self-fastening. It is just the thing for hotels, offices, cottages, camp-meetings, sportsmen, etc. Good for the lawn, piazza, or "coolest place in the house." Splendid for invalids or children. Sent on receipt of price, or C. O. D. For **50 cts. extra,** with order, I will prepay expressage to any railroad Station east of Mississippi River, and north of Mason and Dixon's Line. For **75 cents,** in Minnesota, Missouri and Iowa. Send for circulars.

H. W. LADD, 108 Fulton St., Boston; 207 Canal St., N. Y.; 927 Arch St., Philadelphia; and 94 Market St., Chicago.

RIDGE'S FOOD for INFANTS AND INVALIDS

Has been manufactured in this country for ten years, and all orders for both the United States and Canadas are filled by WOOLRICH & CO., whose name appears on every label. It is not, therefore, an imported article. Its use, however, for 20 years in England and 10 years in America shows its standard worth. Ridge's Food is NOT a medicine, but a highly nutritious and because a COOKED FOOD, easily assimilated. Take no new untried preparation because offered at a cheap price, when Ridge's Food can be obtained from all Druggists at 35 cents and upwards.

Steel Barb Wire.

GALVANIZED or PAINTED.

15 FEET TO THE POUND.

The use of Barbed Wire for Fencing is no longer an experiment, but an acknowledged necessity, as over *one hundred thousand miles* of it were put up last year, and we confidently expect twice the quantity will be used this year, there being no other material anywhere near as cheap, lasting, or effective.

CIRCULARS and SAMPLES BY MAIL to any PART of the WORLD.

CANNOT BE INJURED BY FIRE, WIND, OR WATER.

IT DOES NOT INJURE CATTLE.

Estimating Wire at 12c. a lb. and Wood Posts at 10c. each, a Fence of Four Lines of Wire can be made for 60c. a Rod, or with Galvanized Iron Posts, a Perfect and Everlasting Fence for One Dollar a Rod.

Also Twisted Galvanized Wire without Barbs, 18 Feet to Pound; Patent Iron Posts for Wire Fence, strong, light, and cheap; Wire Netting for Poultry Yards, Lawns, etc.; Wire Stretchers and Cutters.

Eureka Post Hole Digger.

AS SEEN IN THE ENGRAVING.

Work done five times Quicker and Easier than by the old way. No Clogging. No Knee Work. No Back Ache.

NEW PATENT DOOR-YARD FENCE, made of "Round Steel Pickets," with Steel Posts and Frame. Light, handsome, and cheap. Shipped in pieces in boxes. Any one can put it up. Cheaper than wood, and half the price of other iron fences. **Send for Illustrated Circulars to**

GRANVILLE NICHOLSON, 71 John St., N. Y.

TURNIP SEED.

All grown from carefully selected Roots.

The following varieties will be mailed *post-paid* upon receipt of price affixed: *Early White Dutch, White Strapleaf, Red-top Strap-leaf, Cow-horn, Improved American Rutabaga, Long White French, Sweet German, Large Yellow Globe*, 10 cts. per ounce, 25 cts. 4 ounces, 75 cts. per pound. Prices for larger quantities to dealers, either in bulk or packets for retailing, will be given upon application. 15 cts. per pound may be deducted when ordered by express.

B. K. BLISS & SONS, 34 Barclay St., N. Y.

Potted Bidwell.

The finest new Strawberry before the public.

Also **Sharpless** and all the standard and new varieties. Potted Plants now ready, and if set early will give a full crop next summer. I combine these plants with the most liberal offer I have ever made. Descriptive Catalogue free.

Address

Cornwall-on-Hudson, N. Y. **E. P. ROE.**

HEADQUARTERS OF Strawberry. BIDWELL

THE COMING STRAWBERRY.

Now in the third year of bearing. By far the best variety on my place. On one root of one potted plant set last August I counted 24 fruit stalks and 122 berries. Potted and layer plants for sale in large quantities and at reasonable rates.

Address

Cornwall-on-Hudson, N. Y. **E. P. ROE.**

ALL THE CHOICE NEW SORTS.

POT-GROWN STRAWBERRY PLANTS.

Also Common Ground Layers.

More than a Hundred Varieties.

HALF A MILLION CABBAGE and CELERY PLANTS.

Circulars giving varieties and prices in full, free. **J. T. LOVETT,**

Little Silver, Monmouth Co., N. J.

ALL THE GOOD OLD SORTS.

Potted Strawberry Plants afford the best and cheapest method of testing new kinds. For free list of best varieties at lowest prices, address STONE LAKE NURSERY, Laporte, Ind.

30 Acres BIG BERRIES. 50 varieties Strawberry Plants, for summer and fall planting. All the choice new and old sorts in pots or layers. Extra stock at fair prices. Catalogues free. G. H. & J. H. HALE, South Glastonbury, Conn.

CABBAGE PLANTS!

Best ever offered. Grown on *new soil*. By Mail or Express. **Packed with care.** *Send for Price-List*, with full instructions *free*, for keeping plants on hand for *weeks* if necessary, before setting.

SATISFACTION GUARANTEED.

A. G. TILLINGHAST, La Plume, Lacka. Co., Pa.

CABBAGE AND CELERY PLANTS

for late planting. $2.00 to $4.00 per thousand.

G. H. HOLDEN, Clinton, Oneida Co., N. Y.

CABBAGE AND CELERY PLANTS.

Drop Postal to me for prices.

GEO. S. WALES, Rochester, N. Y.

RUMSON NURSERIES.

SPECIALTIES FOR FALL OF 1881.

Peach Trees, American Elm, European Mt. Ash, Carolina Poplars, Willows in variety. Send for prices.

B. B. HANCE, Agent, **Red Bank, N. J.**

100 SELECTED VARIETIES OF PLANTS AND VINES.

GENUINE STOCK at lowest rates for cash. Catalogue free.

J. S. COLLINS, Moorestown, N. J.

JOHN SAUL'S

CATALOGUE OF

NEW, RARE, and BEAUTIFUL PLANTS

Will be ready February 1st, with a Colored Plate.

It is full in really Good and Beautiful Plants. Nepenthes, New Dracenas, New Crotons, New Pelargoniums, New Roses, Geraniums, Fuchsias, etc., with a rich collection of Fine Foliage and other **Greenhouse and Hot-House Plants,** well grown and at Low Prices. **Free to all my Customers;** to others, 10 cts.; or a plain copy free.

Catalogues SEEDS, ROSES, ORCHIDS, FRUITS, etc., free.

JOHN SAUL, Washington, D. C.

STRAWBERRIES.

Newest and Best Varieties.

Grown in Pots and ready for shipment after August 1st. New descriptive priced catalogue **FREE.** Address,

ELLWANGER & BARRY,

Rochester, N. Y.

MILLIONS OF **PLANTS!**

Cabbage $2.00 and **Celery** $2.50 per 1000 by express. Larger quantities at still lower rates. Send for free circulars. Address,

I. F. Tillinghast

LaPlume, Lac. Co. Pa.

CABBAGE PLANTS. Actually millions. $2 per M. $7.50 per 5,000. $12.50 per 10,000. Ready June 1st. Send for sample. Celery plants ready July 1st, at $2.50 per M.

G. R. CLARK, Florist, Scranton, Pa.

KIRKWOOD, Mount Vernon, Orient, Satin Gloss, and the Coming Market Berry, FINCHE'S GREAT PROLIFIC, strong, pure. Plants potted ready for shipment now. All other Strawberries. Potted or Layer Plants. 150,000 Peach Trees, including Waterloo Peach, "Small Fruits," and Osage Orange, Specialties; 200 acres in Trees and Plants. Nursery esta'd 1835. Price-list free. J. PERKINS, Moorestown, N. J.

CHAMPION QUINCE and the NEW VERGENNES

Keeps until Feb. Keeps until Apr.

The two most valuable fruits of recent introduction. Form a club in your neighborhood. TERMS LIBERAL. Address for circ'lr

F. L. PERRY,

Canandaigua, N. Y.

MATTHEWS' SEED DRILL

The Standard of America.

Admitted by leading Seedsmen and Market Gardeners everywhere to be the most perfect and reliable drill in use. Send for circular. Manufactured only by

EVERETT & SMALL, Boston, Mass.

READY JUNE 15.

5 Million CELERY, CABBAGE & CAULIFLOWER PLANTS

All of our own raising, in splendid condition, and at very low rates. Price List, including *Instructions for Culture*, and list of *Seasonable Seeds*, sent free.

PETER HENDERSON & CO.

35 Cortlandt St., New York.

WE ARE OFFERING

The Best REVOLVING and SULKY HAY RAKES

At the Lowest Prices.

Send for circular.

A. B. COHU & CO., 197 Water St., N. Y.

BEST & CHEAPEST BERRY BOX AND CRATE IN THE WORLD
MANUFACTURED AT
THE MICHIGAN BASKET FACTORY OF
A. W. WELLS & CO.
ST. JOSEPH, MICH.
SEND FOR ILLUSTRATED PRICE LIST.

Increased facilities for manufacturing at my new mill at **Alliance, O.,** with large increase in sales, has enabled me to reduce the price of my ORIGINAL PURE PREMIUM BONE, which is warranted pure.

Send for Circular with new Price List to

LOUIS SCHILLING,

Pres. Excelsior Fertilizer Co., **Alliance, O.**

It is manifest that from GOOD SEEDS ONLY can Good Vegetables be obtained.

The character of LANDRETHS' SEEDS has been substantiated *beyond all question.*

They are the STANDARD for Quality.

Over 1500 acres in Garden Seed Crops under our own cultivation.

Ask your Storekeeper for them *in original sealed packages*, **or drop us a postal card for prices and Catalogue.**

Wholesale trade prices to dealers on application.

Founded 1784. **DAVID LANDRETH & SONS,** 21 and 23 S. Sixth St., **Philadelphia.**

Trade **LONDON PURPLE.** Mark.

The best insecticide ever used for the destruction of the Potato Bug, Cotton Worm, and Canker Worm. Sold by all wholesale druggists and stores throughout the United States. If not obtainable of nearest dealer, send direct to sole manufacturers. **HEMINGWAY'S LONDON PURPLE COMPANY (Limited)**

60 Mark Lane, London, England. 90 Water St., N. Y. P. O. Box 990.

Prof. C. V. Riley says: "It can be more effectually sprinkled or sprayed on to the plant than Paris Green by virtue of its greater fineness."

Prof. C. E. Bessey says: "It quickly kills both the larvæ and the winged insect."

Prof. A. J. Cook says: "With this cheap poison we have no longer reason to fear such enemies as the canker worm, etc."

STOCKBRIDGE MANURES

SEND FOR PAMPHLET.

These manures are the richest fertilizers now manufactured, and the best substitute for, and costing *much less* than guano, which is now practically out of the market. Unlike guano, they *are not stimulants* and *exhaustive*, but *permanent* and *lasting*, being composed of bone, potash, etc. You can draw at one load enough for 3 to 5 acres, or as much plant-food as is contained in 20 loads of ordinary manure. Corn, potatoes, hay, etc., are bringing such good prices that it will pay to use the Stockbridge extensively. If there is no local agent near you, send to us.

BOWKER FERTILIZER CO.

BOSTON & NEW YORK.

BOWKER'S HILL AND DRILL PHOSPHATE

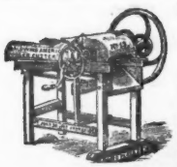
SEND FOR PAMPHLET.

This is a true bone superphosphate, and may be used *on any crop*, in the hill or drill or broadcast, either *with* or *without* manure, and will produce a much earlier and larger crop. In the Report of the Mass. Inspector of Fertilizers, its valuation is from $3 to $10 per ton higher than other Phosphates which sell at the same price. The past year over 3000 tons were sold against 100 tons three years ago, showing that it is liked by the farmers. If there is no local agent near you, send to us.

Also for sale STOCKBRIDGE MANURES.

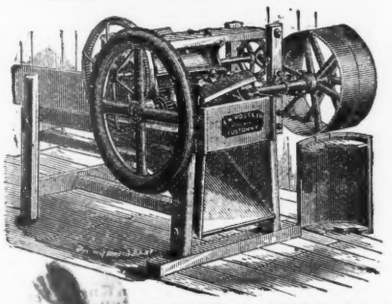
BOWKER FERTILIZER CO.

BOSTON & NEW YORK



BALDWIN'S Ensilage Cutter.
SIMPLEST AND BEST.
Only three Feed Gears.
Thoroughly tested during the season of 1879 and 1880 and proved a grand success. Fitted with Patent Safety Balance Wheel. See June No. *American Agriculturist.* Send for circular containing full description, prices, and testimonials. C. PIERPONT & CO., Mfrs., New Haven, Conn., U. S. A.

ENSILAGE.



The ROSS GIANT CUTTERS

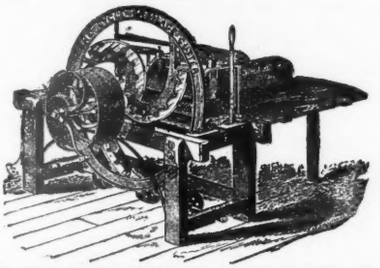
For Ensilage and Large Stock Raisers.

OF IMMENSE SIZE, WEIGHT, STRENGTH, AND CAPACITY.

Guaranteed the Best Cutter for the Business.

Send for Circulars to

E. W. ROSS & CO.,
FULTON, N. Y.



Our Cycle Ensilage Cutter is made on only correct principle for cutting *in safety* and with small power, Stalks and Grass for Ensilage, also Dry Fodder. 4 sizes, $50 to $150. 2 to 10 Tons per hour. Reference to largest Ensilagists in U. S., also to large stables and farmers. Satisfaction guaranteed. Larger sizes exchanged for smaller. Goffart's treatise with Latest Facts, How to Build Silos, etc., 3 cts.

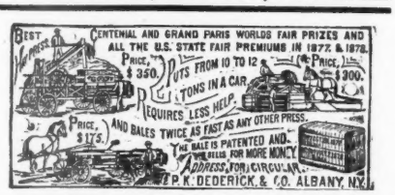
N. B.—Francis Morris has ensilaged 500 tons and more yearly since 1876. We published first treatise in 1878. For South Seed Corn, suitable for ensilage, single bushel, $2.50; larger quantities, $2.00.

THE NEW YORK PLOW CO., 55 Beekman St., N. Y.

CHAMPION GRAIN DRILL.

Positive Force Feed.
Grain and Grass Seed Distributer.
Fertilizer Attachment Unequaled.
SEND FOR DESCRIPTIVE PAMPHLET.

JOHNSON CARE & TRUMAN,
OWEGO, TIOGA CO., NEW YORK.


Best
Centennial and Grand Paris Worlds Fair Prizes and all the U.S. State Fair Premiums in 1877 & 1878.
Price, $350.
Puts from 10 to 12 Tons in a Car
Price, $300.
Requires less help
Price, $175.
And bales twice as fast as any other press.
The bale is patented and will sell for more money.
Address, for circular,
P. K. DEDERICK & CO. ALBANY, N.Y.

Send for Descriptive Catalogue

UNION RAILWAY HORSE POWER

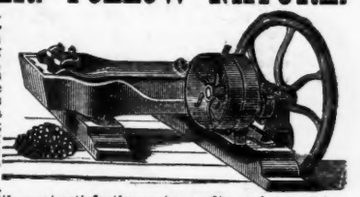
THRESHERS AND SEPARATORS.

These Powers are *guaranteed* to produce more power with **less elevation** than any other Railway Power.

WM. L. BOYER & BRO.,
2101 Germantown Ave.,
PHILADELPHIA, PA.

Also manufacturers of the PREMIUM FARM GRIST MILL.

CHEAPEST AND BEST FERTILIZER.--FOLLOW NATURE.



Which USES GROUND RAW LIMESTONE IN MAKING THE SOIL. There were no Lime Kilns around burning Lime when the good **Limestone Farming Lands** were originally made. Every Farmer can prepare his own Fertilizer with an **ordinary Horse Power** by using **FORSTER'S COMBINED CRUSHER & PULVERIZER,** which takes a lump of Limestone three to five inches square, and Crushes and Pulverizes it in **one operation,** same as Burrs. Farmers use the Ground Raw Limestone, and drill and sow it just as it comes from this machine. W. W. Reed, of Erie, has tried it 6 years, and says "it shows a profit over Bone Dust of $1.95 per acre; over Phosphate of $4.28 per acre; over Guano of $9.70 per acre; over Salt of $5.90 per acre, **and that it will last twice as long.**"—John G. Bear, of Montgomery, Lycoming Co., says: "I believe it to be the cheapest and best Fertilizer in this country. *It is worth three times as much as Burnt Lime, and with this Machine does not cost half as much as Burnt Lime to make.*"—H. C. Falls, New Castle, Pa., says: "I used the Ground Limestone last year with great satisfaction as to results, and cannot too strongly recommend it for farm and garden purposes. Where I dropped my corn on top of it, the corn came up first, and was strong and thrifty—the Limestone drawing the moisture to the roots. Used in place of Paris Green on Potatoes, it kept the Bugs away and made the plants thrifty and strong; being washed into the ground it benefited the Potatoes in an astonishing manner. Address only,

TOTTEN & CO., Pittsburgh, Pa. ONLY MAKERS.

SPRING STEEL TOOTH

HORSE RAKES.

Highest Award **Medal of Honor**
at the
Centennial and Vienna Exhibitions.
CHAMPIONS OF THE WORLD.

No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from us. Responsible Agents wanted where we have none.

Send Stamp for Catalogues of RAKES, THRESHING MACHINES, &c.

WHEELER & MELICK CO.,
ALBANY, N. Y.

BEST RAKE EVER MADE.

This Rake Received the Highest Award at the Centennial Exposition and Field Trial. The only Silver Medal awarded at the Paris Universal Exposition, in 1878.

This rake has taken more first premiums than any other Rake.

It is Easily Handled by a Girl or Boy, strong enough to drive a horse.

MANUFACTURED BY
THE BELCHER & TAYLOR AGRICULTURAL TOOL CO.,
Chicopee Falls, Mass., U. S. A.

MEDAL MACHINES.

New York State Agricultural Works.

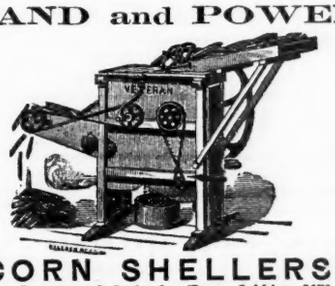
First Premiums at all Competitive Trials.

Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Corn Cultivators, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Portable Steam-Engines, Cider and Wine-Mills and Presses, Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO.,
ALBANY, N. Y.

Send stamp for circular and report of Centennial trial.

HAND and POWER



CORN SHELLERS.

Horse Powers and Jacks for Farm, Jobbing, Mill, and Warehouse work. For circulars and prices, address
Sandwich Manufacturing Co., SANDWICH, Illinois.

EXCELSIOR LAWN MOWER

CROQUET MOWER, $11.

HAND MOWERS
Three Patterns, 10 to 20 inch cut.

HORSE MOWERS
25 to 40 inch cut.

OUR SIDE-WHEEL MOWER
Is Light, Simple, and Durable.
It is the best in the market.
All our Mowers guaranteed.

Send for Illustrated Circular and Price-List.
CHADBORN & COLDWELL MFG. CO., Newburgh, N.Y.,
OR
ROBERT C. REEVES,
185 & 187 Water St., New York City,
DEALER IN AGRICULTURAL IMPLEMENTS, SEEDS, AND FERTILIZERS.

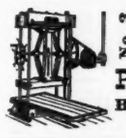
CITY AND COUNTRY TRADE
SUPPLIED WITH THE
Celebrated Excelsior Lawn Mower.
H. B. GRIFFING,
70 Cortlandt Street, N. Y. City.

THE "BUCKEYE" JUNIOR LAWN MOWER

MANUFACTURED BY
MAST FOOS AND CO.
SPRINGFIELD, O.

EASY TO WORK, Simple in Construction, Beautiful in Appearance, Noiseless in Operation Strong and Durable.

Send to MAST, FOOS & CO., FOR CIRCULARS AND PRICES.



No. 3. **CIDER**
Presses, Graters, Elevators, &c.
BOOMER & BOSCHERT PRESS CO., Syracuse, N. Y.

AMERICUS CIDER MILL

WHITMAN'S PATENT.

The Best Cider and Wine Mill made. It will make Twenty per cent more Cider than any other.

Perfectly Adjustable.

Three Sizes.

Geared outside. Large Mills made for two cranks. Prices as low as any first-class mills.

Circulars giving full description sent free.

Address the manufacturers,

WHITMAN AGRICULTURAL COMPANY, Saint Louis, Mo.

IMPROVED HYDRAULIC RAMS.

Send for Circular and Price List. Address **A. GAWTHROP & SON, Wilmington, Del.** Awarded Medal and Diploma at the Centennial Exhibition, Phila.

The Crowning Success. The Grandest Organ. The Most Remarkable Offer.

Sent direct from Factory. Order at once as we shall be overwhelmed with orders for this **the Crowning Success** *of 20 successful years.*

MARCHAL & SMITH

Are happy to announce the perfection and completion of their new Organ—Their Grandest Musical Combination. Prompted by the unprecedented success attending our previous efforts, and encouraged by the universal approval of our customers from all parts of the world, we have continued our experiments, and at last perfected an instrument which is the crowning success of organ building.

As we send to purchasers **direct from our factory,** avoiding middlemens' profits and agents expenses, and being sure of selling thousands of these Beautiful Instruments, we offer this Organ, combining great Power, Exquisite Purity and Sweetness with infinite variety for **$65**

and send it for fifteen days trial in your own home. This Organ (No. 475) is 72 inches high, 48 inches long, 5 Octaves, Beautifully Carved, Solid Walnut Case with Ornamental Lamp Stands, Carved Brackets, Turned Handles, Sliding Fall, Artistic Fret Work, Pocket for Music, Large Extension Top with Polished Panels, making a Beautiful and Artistic Parlor Ornament. It contains the following full Sets of Reeds:

CELESTE, DIAPASON, CLARIONET, MELODIA, AEOLINE, SUB-BASS, With OCTAVE COUPLER, GRAND ORGAN and VOX HUMANA.

Twenty Beautiful Stops

As Follows:

1. MELODIA.
2. Diapason Forte.
3. DIAPASON.
4. Celestina.
5. SUB-BASS.
6. Celeste Forte.
7. COUPLER.
8. Dulcet.
9. CELESTE.
10. Echo.
11. Keraulophon.
12. Viola.
13. AEOLINE.
14. Bourdon.
15. CLARIONET.
16. Vox Humana.
17. COUPLER.
18. Piano.
19. Grand Organ Knee Stop.
20. Right Knee Swell.

The most remarkable organ ever made. We **Challenge the World** to equal it. We will box and deliver this organ on board cars here, with handsome Stool, Instruction Book and Music, for only **$65**

Call and select, or send your order, and we will ship at once, for fifteen days' trial. **Guaranteed for six years.**

In ordering, send the certificate of your bank, or some responsible business man, that the organ will be promptly paid for or returned to us. Freight will be paid by us both ways if in any way unsatisfactory. **You take no responsibility** till you receive and approve the organ after **15 days' trial in your own home. Send in your order at once.** Remit by Post-Office Money Orders, Express (prepaid), or by Draft on New York. **Money refunded and freight charges paid** both ways if in any way unsatisfactory. If you do not order at once, be sure to get our illustrated catalogue. It contains information which protects the purchaser and makes deceit impossible. Order direct from this advertisement. You take no responsibility till you receive and approve the organ. To avoid useless correspondence we state that absolutely no reduction is possible. One organ, or one hundred are sold at the same price. We unhesitatingly advise all who are about to purchase other styles to order this organ. It stands unequaled in quality, compass and price.

A moments consideration will show the certainty of securing a superior instrument from us. Our system puts each organ on **its own** merits, by submitting it to tests where no one can mislead in its favor, and where every interest is to find defects, if any exist. An organ that passes triumphantly through such crucial test may surely claim to be second to none in the world, and the purchaser may well feel secure in having an organ that stands first in its class. Send in your order at once, and it will have immediate attention. If you do not want an instrument yourself, will you please hand this offer to a friend who wishes to purchase.

MARCHAL & SMITH,

No. 8 West Eleventh St., (3 Doors from Broadway) New York, N. Y.

CHOICE NEW BOOKS.

UNCLE MARK'S AMARANTHS. By Annie G. Hale.....$1 50
FOR MACK'S SAKE. By S. J. Burke.....1 25
HISTORY OF SWITZERLAND. By Harriet D. Slidell Mackenzie.....1 50
THE ONLY WAY OUT. By Mrs. Jennie F. Willing.....1 50
SOME CURIOUS SCHOOLS. Various Authors.....1 00
NEXT THINGS. By Pansy.....1 00
MRS. HARPER'S AWAKENING. By Pansy.....1 00
TWO YOUNG HOMESTEADERS. By Mrs. Theo. R. Jenness.....1 50
SO AS BY FIRE. By Margaret Sidney.....1 25
THE HISTORY of the MANUSCRIPTS. By Rev. G. E. Merrill.....1 00
DAVID LIVINGSTONE. By John S. Roberts 1 50
PRINCE AND PAGE. By Miss Charlotte M. Yonge.....1 25
LITTLE DUKE. By Miss Charlotte M. Yonge.....1 25
GOLDEN DEEDS. By Miss Charlotte M. Yonge.....1 25
SHAKESPEARE BIRTHDAY TEXT BOOK.....90

THE STORY

—OF THE—

MANUSCRIPTS,

By REV. GEORGE E. MERRILL.

Illustrated with fac-similes of the various New Testament Manuscripts.

PRICE, $1.00.

D. LOTHROP & CO., - - - - BOSTON.

70 YOUR NAME in New Type on 70 Cards 10c
New styles, by best artists: *Bouquets, Birds, Gold Chromos, Landscapes, Water Scenes, etc.*—no two alike. Agent's Complete Sample Book, **25c.** Great variety *Advertising and Bevel-Edge Cards.* Lowest prices to dealers and printers. **100** *Samples Fancy Advertising Cards,* **50c.** Address STEVENS BROS., Box 22, Northford, Ct.

"FOREST AND STREAM."

The American Sportsman's Journal.

DEVOTED TO

NATURAL HISTORY, FISH CULTURE, FISHING, SHOOTING, THE DOG, THE RIFLE, And YACHTING.

Discusses Questions of Life Interest to every Farmer in America.

Send for a Sample Copy.

FOREST AND STREAM PUBLISHING CO., New York City, N. Y.

100 SOUND WELL-MADE 10 and 12 gauge **Breech-Loading DOUBLE Shot Guns,** absolutely perfect except a few rust spots on the outside. Sent C.O.D. (to examine) for **$16.00** to **$18.00. Better Guns** than are usually retailed at **$25** to **$30.** CHARLES FOLSOM, 106 Chambers Street, New York.

IT PAYS to sell our Rubber Printing Stamps. Samples free. J. M. MITTEN & CO., Cleveland, Ohio.

102 OCEAN SHELLS & CHROMO CARDS, no 2 alike, name on 10c.; 50 for 6c.; 40 Glit & Bevel Edge 10c. CLINTON & CO., North Haven, Conn.

☞ **FRIENDS** If you are in any way interested in

BEES OR HONEY,

We will with pleasure send you a sample copy of our **MONTHLY GLEANINGS IN BEE CULTURE,** with a descriptive price-list of the latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all books and journals, and everything pertaining to Bee Culture. *Nothing Patented.* Simply send your address on a postal card, *written plainly,* to **A. I. ROOT, Medina, Ohio.**

I have used Higgin's English Salt and consider it superior to Ashton's. I ordered Higgin's Salt, but the Ashton's was sent me and I returned the Ashton's. O. M. Richards.

Elmo, Wis., March 9, 1881.

CHEAPEST BOOKS IN THE WORLD

Macaulay's History of England, 5 large 12mo vols., cloth, gilt, only $2.00.
Macaulay's Essays, 3 large 12mo volumes cloth, only $1.50.
Favorite Pronouncing Dictionary, a complete Dictionary, cloth, only 15 cents.
Shakespeare's Complete Works, handsomely bound in cloth, black and gold, only 50 cents.
Taine's History of English Literature, 1 handsome 12mo volume, cloth, only 50 cents.
Other books equally low.
Full descriptive catalogue Free.
MANHATTAN BOOK CO.,
P. O. Box 4580. 16 West 14th St., New York.

50 CARDS, Chromo, Motto, Roses, &c., all new style, name on, 10c. Samples 10c. G. A. SPRING, New Haven, Ct.

40 ELEGANT CHROMO CARDS, New Styles, 10c. Agents wanted. L. JONES & CO., Nassau, N. Y.

40 LOVELY Floral, Panel, Hand & Bouquet Chromo Cards, with name, 10c. FRANKLIN PRINTING CO., New Haven, Ct.

20 GOLD AND SILVER CHROMO CARDS, with name, 10c., post-paid. **G. I. REED & CO.,** Nassau, N. Y.

GET THE STANDARD
WORCESTER'S
QUARTO DICTIONARY.

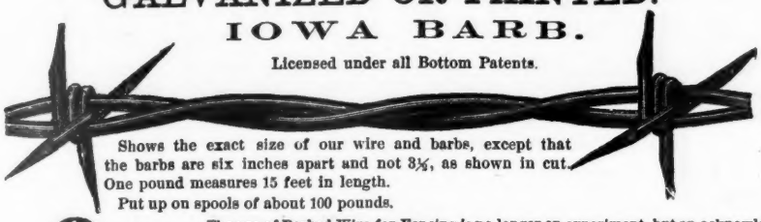
HIRES' IMPROVED ROOT BEER PACKAGE, 25 CTS. Makes five gallons of a delicious and sparkling beverage,—wholesome and temperate. Sold by druggists, or sent by mail on receipt of 25 cts. Address, CHAS. E. HIRES, Manufacturer, 48 N. Del. Av., Philadelphia, Pa.

Steel Barb Wire Fencing.

GALVANIZED OR PAINTED.

IOWA BARB.

Licensed under all Bottom Patents.



Shows the exact size of our wire and barbs, except that the barbs are six inches apart and not 3½, as shown in cut. One pound measures 15 feet in length.

Put up on spools of about 100 pounds.

The use of Barbed Wire for Fencing is no longer an experiment, but an acknowledged necessity, as over *one hundred thousand miles* of it were put up last year, and we confidently expect twice the quantity will be used this year, there being no other material anywhere near as cheap, lasting, or effective.

CAN NOT BE INJURED BY FIRE, WIND, OR WATER, AND WILL LAST A CENTURY.

IT DOES NOT INJURE CATTLE.

Estimating Wire at 12c. a lb. and Wood Posts at 10c. each, a Fence of Four Lines of Wire can be made for 60c. a Rod, or with Galvanized Iron Posts, a Perfect and Everlasting Fence for One Dollar a Rod. Ask your Merchant for our Wire, or write to us direct.

We also manufacture STAPLES, POST-HOLE DIGGERS, WIRE STRETCHERS and CUTTERS, IRON POSTS, etc.

Circulars and Samples by Mail to any Part of the World.

THE CELEBRATED

EUREKA POST HOLE DIGGER

Work done five times Quicker and Easier than by the old way.

No Clogging. No Knee Work. No Back Ache.

Price $3.50, delivered to any part of the United States.

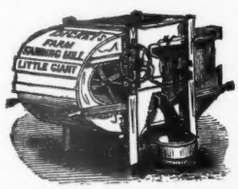
Buy direct from the Manufacturers.

Sole Manufacturers East of Mississippi River.

IOWA BARB WIRE COMPANY.,

99 JOHN STREET, NEW YORK, U. S. A.

A. P. DICKEY FANNING MILL.

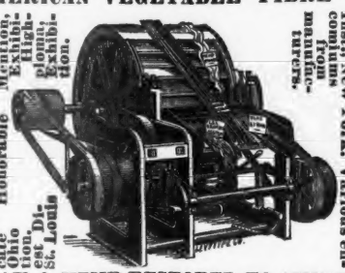


The **Best Fanning Mill in the World.** Obtained Centennial Award and Grand Medal, also best Award at Paris Exposition in 1878. It cleans perfectly Oats, Chess, Cockle, and all foul matter from Wheat and Barley. It grades and seperates for Seeding and Market, cleans all kinds of small seeds, and will save any farmer its cost annually.

Lowest freights procured for purchasers. Address

DICKEY & PEASE, Racine, Wis.

AMERICAN VEGETABLE FIBRE CO.


Elliot Cresson Gold Medal, Franklin Institute.
Centennial Exhibition. Honorable Mention.
Ohio State Fair. Highest Diploma.
Exhibition. St. Louis
Silver Medal, Penn. State Fair. Medal of Progress, Am. Inst., New York. Various encomiums from manufacturers.

FLAX & HEMP RESTORED TO AMERICA!

Great Impediment Removed from Flax and Hemp in the United States, by the Machine of the American Vegetable Fibre Co. Each of the Awards above named was accompanied by the warmest approval of the Judges examining the Invention. The speed of its action, and the completeness of its work, surprises all witnesses. The dependence on coarse hand labor, which destroyed our trade for nearly 50 years, is now removed by the substitution of this most ingenious Machine, which will fill the dreary gap between the cultivation and manufacture of these and similar Fibres, and thus restore to us the long lost "Golden Fleece." Illustrated Pamphlets, giving full particulars, sent by mail on application to **American Vegetable Fibre Co.**

JOS. F. DUNTON, Manager,
213 South Front St., Phila,, Pa.

AGENTS WANTED EVERYWHERE

to sell the best **Family Knitting Machine** ever invented. Will knit a pair of stockings, with **HEEL** and **TOE complete,** in 20 minutes. It will also knit a great variety of fancy-work for which there is always a ready market. Send for circular and terms to the **Twombly Knitting Machine Co.,** 409 Washington St., Boston, Mass.

MARYLAND FARMS $7 to $25 per acre. Short winters, breezy summers, healthy climate. Catalogues free. H. P. CHAMBERS, Federalsburgh, Md.

BAILEY'S PATENT

Practical Tree Trimmer.

By the use of this new Implement, Fruit and Shade Trees can be more readily pruned, and with less labor and time, than by any other method. Two or three inch limbs can be easily cut with a few blows of the sliding hammer.

Price, $24 to $26 per Dozen,

according to length of handles. Liberal discount to dealers. Agents wanted to sell this Labor-Saving Implement.

MANUFACTURED BY

THE REMINGTON AGRICULTURAL CO.,

ILION, N. Y.

Branch Offices: { 57 Reade Street, New York. 21 So. Howard Street, Baltimore, Md.

Also Manufacturers of a General Line of Agricultural Implements.

WELL BORING,

ARTESIAN WELL DRILLING & MINERAL PROSPECTING MACHINERY.

and how to use, is fully illustrated, explained and highly recommended by the **"American Agriculturist"** in the November Number 1879. Page 465. Send for it. Portable, low priced, worked by man, horse or steam power. Needed by farmers in every county. Good business for Winter or Summer and very profitable. Can get good wells in earth or rock anywhere. We want the names of men that need wells. Send for illustrated price-list and terms to Agents. Address,

Pierce Well Excavator Co., 29 Rose Street, New York, U. S. A.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 39, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates (postage included), see page 304, and reckon 22 cents to the shilling sterling.

Destroying Prairie Dogs.—The first response to the request of last month for information as to the destruction of Prairie Dogs, comes from Nebraska, and from a lady. Mrs. A. Williamson writes that one of her neighbors depopulated a small Dog-town by the use of poisoned corn. The grain was soaked in water in which Strychnia had been dissolved and was afterwards scattered about in the "town."—We should like to know more about this case. Strychnia is remarkably insoluble in water, it requires over 6,000 parts of water to dissolve one part of strychnia. That corn soaked in such a solution should kill the Prairie Dogs, shows that these animals are remarkably susceptible to the effects of strychnia. The salts of strychnia are more soluble than strychnia itself, and a very little acid (Sulphuric and Muriatic) would greatly aid in the solution. Still, if the simple solution in water is effective, all the better. We thank Mrs. W., and hope to hear from others.

Children's Shoes.—A pair of child's shoes well worn at the toes shows that the little wearer is in the enjoyment of the health that comes from vigorous exercise. But the parent who must supply many pairs of shoes to many little children, does not take a sentimental view of worn out toes. He would not deprive the youngsters of the exercise, but would have the shoes remain whole. The "Black Tip" of the American Shoe Tip Co. comes to his help—a cap that thoroughly protects the shoe at its weakest point—the toe. Those who do not like the appearance of the copper or silvered tips, so long in use, will find in the comparatively recent "Black Tip," a protection which, while it will not at all restrict the youngsters right to "stub its toes," will avoid the poverty-stricken appearance of shoes with the great toes exposed, and diminish the outlay for shoes.

☞ **See Special Announcement on p. 299.**

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending June 7th*, 1881 (as compared with the preceding month), and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	384,000	4,449,000	5,531,000	90,000	104,000	907,000
24 d's *last* m'th	476,700	3,445,000	2,345,000	45,100	277,000	1,439,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d. *t'sm'th*	476,000	44,707,000*	17,543,000	138,000*	15,500	3,370,000*
24 d. *l't m'th*	474,000	36,068,000*	13,858,000*	227,000*	106,000	4,649,000*

* Including forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1881	384,000	4,449,000	5,531,000	90,000	104,000	907,000
22 days 1880	401,000	3,605,000	4,117,000	102,000	291,000	1,108,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1881	476,000	44,707,000	17,543,000	138,000	15,500	3,370,000
22 days 1880	347,000	23,794,000	7,491,000	156,000	—	2,337,000

3. *Stock of Grain in store in New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
June 7, '81	1,432,783	575,725	82,136	29,466	428,999	58,304
June 7, '80	1,251,384	105,442	61,454	26,425	461,490	184,747
June 10, '79	1,984,368	744,320	118,733	128,542	217,046	84,549
June 11, '78	1,487,700	676,626	148,389	197,507	603,152	238,285

CURRENT WHOLESALE PRICES.

	June 10, 1880.	June 7, 1881.
FLOUR—Superfine	$3 65 @ 4 50	$3 90 @ 4 60
" Extra Southern	4 50 @ 7 00	4 85 @ 7 50
" Extra Western	4 00 @ 8 50	4 50 @ 8 25
" " Minnesota	4 10 @ 8 50	4 50 @ 8 00
" Rye, Superfine	4 60 @ 5 60	5 50 @ 6 00
CORN-MEAL, ₱ bbl.	2 50 @ 3 15	2 75 @ 3 40
WHEAT—All kinds of White	1 20 @ 1 30	1 15 @ 1 25
" Red and Amber	1 15 @ 1 33	1 12 @ 1 31
" Spring	1 05 @ 1 22	88½@ 1 24
CORN—Yellow	55 @ 58	56 @ 58
" White	55 @ 58	57 @ 66
" Mixed	52 @ 55	48 @ 56½
OATS	39 @ 47½	43½@ 51½
RYE	96 @ 96	1 07 @ 1 11
HAY—Bale, ₱ 100 lbs	70 @ 1 05	85 @ 1 12½
STRAW, ₱ 100 lbs	50 @ 1 15	55 @ 1 05
COTTON, Middlings, ₱ lb	11¾@ 12	11¾@ 11¾
HOPS—new crop, ₱ lb	27 @ 40	15 @ 23
" olds, ₱ lb	4 @ 12½	5 @ 12
SEED—Clover, W. & St. ₱ lb	6¾@ 7¾	7 @ 9
" Timothy, ₱ bushel	2 40 @ 2 65	2 80 @ 3 00
" Flax, ₱ bushel	1 40 @ 1 55	1 30 @ —
TOBACCO, Kentucky, &c., ₱ lb	5 @ 14	4 @ 15
" Seed Leaf, per lb	6 @ 40	6 @ 40
WOOL—Domestic Fleece, ₱ lb	28 @ 55	25 @ 45
" Domestic, pulled	25 @ 56	20 @ 46
" California	18 @ 38	14 @ 24
TALLOW, ₱ lb	6 @ 6½	6½@ 6¾
OIL-CAKE—₱ ton	$2 50 @$33 00	$30 00 @ —
PORK—Mess, ₱ bbl	11 35 @11 40	15 70 @17 00
" Extra Prime, ₱ bbl	9 50 @ 9 75	13 00 @13 50
BEEF—Extra Mess	10 00 @10 50	11 25 @12 00
LARD, in trcs. & bbls, ₱ 100 lb	6 80 @ 7 40	10 75 @11 15
BUTTER—State, ₱ lb	13 @ 21	15 @ 22
" Western, poor to f'cy, lb	9 @ 20	10 @ 20
CHEESE	8 @ 12½	7 @ 10
EGGS—Fresh, ₱ dozen	10 @ 13	15 @ 18

Speculative activity has been the notable feature, as well in the commercial as in the financial line, during the past month—attended, of course, by frequent, and, in several instances, wide fluctuations in values, which worked seriously—in the produce lines—against purchases for regular home trade requirements, as well as for shipment, though the dealings reached a very liberal aggregate, especially in Wheat, Corn, and Western Steam Lard, in the way of options. Recently, in Breadstuffs, Provisions, and Cotton, the advantage as to prices has been with buyers, as the accounts from the West, as well as from Europe, have been rather of a depressing tenor. At the extreme close, however, the market hardened again, and Wheat, Corn, Oats, and Western Steam Lard, and the favorable grades of Cotton, developed much more firmness. The course of the Breadstuff interest hinges, measurably, on the current crop and weather reports. Canal navigation was resumed, formally, for the season on the 17th of May, and very free deliveries therefrom of Grain were subsequently made here, which, however, were quite promptly marketed, as far as receivers sought to place them at the ruling quotations. The May contract deliveries and settlements on Winter Wheat and No. 2 Corn occasioned great disturbance.... Extraordinary animation has been reported in Flax Seed, of which the receipts, since our last, have been about 292,000 bushels—largely disposed of previous to arrival; while sales have been reported about 35,000 bushels, for export, at $1.30@$1.32½, chiefly at $1.30@$1.31—about 20,000 bushels going forward by steam to London, at 5*d.* per bushel....Wool has been in more favor with buyers and has shown more steadiness....Ocean freights have been quoted somewhat stronger for Grain accommodation on a better demand—rates on Grain to Liverpool by steam closing at 3*d.*; to London at 4¼@5*d.*; to Glasgow at 4¼*d.*; to Avonmouth at 4¼*d.*; to Rotterdam at 5¼*d.* per bushel; and on flour by steam for British ports, at 7*s.*6*d.* @15*s.* per ton. A moderate chartering movement has been noted at about steady figures, sailing vessels of average carrying capacity—say 3,000 to 4,000 qrs.—closing here at 4*s.* 3*d.* per qr. of 480 lbs. The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 14,910,000 bushels; of Corn, 9,223,000 bushels; of Rye, 327,400 bushels; of Barley, 513,100 bushels, and of Oats, 4,589,400 bushels.

Prices of Fertilizers.

Nitrate of Potash (95 per cent), per lb	7¼@8½c.
Sulphate of Potash (potash 41 per cent), per lb	3½@4 c.
do. do. (potash 27½ per cent, per lb	1¼@1¾c.
German Potash Salts (potash 12 to 15 p. c.), p. ton	$12.00@15.00
Muriate of Potash (potash 50 per cent), per lb	2¼@2½c.
Nitrate of Soda, per lb	4 @4¼c.
Sulphate of Ammonia (25 per cent), per lb	5¼@5¾c.
Dried Blood (ammonia 13 per cent), per ton	$50.00@52.00
No. 1 Peruv. Guano, guaranteed, ₱ ton	58.00
Soluble Pacific Guano, per ton	45.00
Excelsior Fertilizer Co., Fine Ground Raw Bone	45.00
Mapes' Complete Manure (clay soils), per 1,000 lbs	26.00
do. do. do. (light soils), per 1,000 lbs	26.00
do. do. do. "A" Brand (wheat), ₱ 1,000 lbs	21.00
do. Tobacco do. do.	53.00
do. Fruit and Vine Manure, per ton	37.00
do. Pure Raw Bone, per ton	38.00
Matfield Fertilizer, No. 1	45.00
do. do. No. 2	30.00
Homestead Superphosphate, per ton	40.00
do. Tobacco Grower, per ton	60.00
Banner Raw Bone Flour, per ton	45.00
Bowker's Wheat Phosphate, per ton	40.00
do. Acid Phosphate, per ton	25.00
do. Soluble Bone, per ton	35.00
do. Grain Phosphate, per ton	40.00
do. Hill and Drill Phosphate, per ton	45.00
Stockbridge Corn manure, per ton	50.00
do. Potato manure, per ton	50.00
Stockbridge Rye Manure, per ton	45.00
do. Wheat Manure, per ton	45.00
do. Seeding Down Manure, per ton	40.00
Walton, Whann & Co.'s Raw Bone Phosphate, per ton	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

The Great Barbed Fence Suit.

Numerous inquiries come from western farmers and others, some of whom have been in fear of penalties for having used barbed wire. To answer these we have obtained from responsible sources the following items:

There were a great number of individuals and companies making and selling a variety of forms of barbed fencing. The Washburn & Moen Company, and Isaac L. Ellwood, had purchased the patents of Wm. D. Hunt, (No. 6976), Lucien B. Smith (No. 7136), Michael Kelly (Nos. 6902 and 7035), Joseph Glidden (Nos. 6913 and 157,124), and Chas. Kennedy (No. 163,965). They sued seven parties, as infringers of the patents owned by them. After three years litigation the plaintiffs secured a verdict, which by implication gave them the exclusive right to any and every form of wire or strap fencing armed with barbs, on the ground that the patents now owned by them were the original ones, that of Wm. D. Hunt being the bottom and centrally controlling one. Since this decision, all the principal manufacturers have settled by paying a royalty or a round sum, in settlement for past manufactures. *This payment releases from liability those farmers or others who have bought the wire of them and used it.*

So far some forty individuals and companies have settled for the past on the best terms they could, and taken out licenses to continue the work under certain limitations, and are now going on making and selling. The parties licensed up to this date are as follows: (This list will indicate the sweeping character of the patent decision, as well as the extent of this industry, the present production of barbed wire being reported at full 40,000 pounds, or 7 to 8 miles a day!)

In OHIO, at Cleveland: Railway Barb Fencing Co.; Ohio Steel Barb Fencing Co.; Cleveland Barb Fence Co.; Farmers' Steel Barb Fence Co.; and the Cincinnati Barb Wire Fence Co.——In ILLINOIS, at Chicago: Noble G. Ross; F. T. Sherman and Eben J. Mark; Chicago Galvanized Wire Fence Co.; Edwin A. Beers; Oscar F. Moore; Crandall Mfg. Co.; Herman E. Schnabel; Thorn Wire Hedge Co. At Joliet: Norton & De Witt; H. B. Scutt & Co.; Lock Stitch Fence Co.; Watkins & Ashley; Wm. J. Adam; Lambert, Bishop & Co; Stone City Fence Co. At Sterling: N. W. Western Barb Wire Fence Co.; Fish & Cornell; Novelty Mfg. Co.; J. W. Lawrence & Co. Also, Arthur H. Dale, at Leland; Reuben Ellwood, at Sycamore; Frentress Barb Wire Fence Co., at East Dubuque; and Sandwich Enterprise Co., at Sandwich.——In IOWA: Iowa Barb Steel Wire Co., at Marshalltown; Home Mfg. Co., at Cedar Rapids; Baker Mfg. Co., at Des Moines; and Hawkeye Steel Barb Fence Co., at Burlington.——*In other States:* Thos. Gibson, Oronoka, Neb.; Iowa Barb Wire Co., Johnstown, Pa.; Pittsburgh Hinge Co., at Beaver Folly, Pa.; St Louis Wire Fence Co., Mo.; M. W. Warne and Albert Henley, at Lawrence, Kan.; R. Hallidie, at Stockton, Cal.; and Thos. H. Dodge, Worcester, Mass.

Those who have used the wire of the forty companies last named, are exempt from any liability.

Universal Force Pumps.—We like to see one enthusiastic in his business. He may be called a man with—whatever it may be, "on the brain"—a man "with one idea," or one "with a mission." Mr. W. S. Blunt, several years ago thought it was his "mission" to furnish a good pump; he has had "pump on the brain" ever since. Some 12 years or more ago, needing a pump, we purchased one of Mr. Blunt. Since then he has sent for the pump several times, in order that he might bring it "up to the times." The pump takes water from a cistern 25 or 30 feet away, and besides supplying the the kitchen, where the pump is placed, forces water into the adjoining wash-room. The noteworthy point in this is the ease with which the changes are made, to adapt it to locality, and to every requirement. More recently we procured another pump for a well, and besides being an anti-freezing, ordinary pump, it serves as an admirable force pump. The simplicity of construction to avoid friction, and of readiness with which its changes may be made, illustrates what excellent results follow a proper enthusiasm in one's calling. If Mr. Blunt had been satisfied with his first pump, we should not have had the admirable form, so well suited to every possible case, that it is with propriety styled "Universal."

Read the Advertising Columns.—Letters are daily received by the Editors, asking where pigs, fowls, seeds, fertilizers, machinery, etc., can be procured. We consider all the information of this kind that is given in the advertising pages sufficient, if those needing anything will only look there; we can not find room to repeat what is already plainly told elsewhere. Every page of the *American Agriculturist*, including the covers, is interesting reading, and should all be carefully examined every month. In addition to looking after what one may want, the reading of what others have to say, in offering their wares, etc., starts up some new idea in the mind of the reader.—When writing to any advertiser, always tell him in what paper his advertisement was seen.

Ensilage Cutters.—"The Baldwin." Our inventors and makers of agricultural machinery are doing much to aid those who would preserve their fodder corn by ensilage, by affording them the means of meeting one of the requirements of success—the rapid filling of the silos. We have just received an account of a new cutter, "The Baldwin," made by C. Pierpont & Co., New Haven, Conn. We hope to give, another month, a review of the subject of ensilage, including notices of the several cutters now offered.

New York State Farming Prospects.

The "prospects" of the crops is always a question of great interest to all classes—farmers, and business men, and manufacturers, as well as dealers in grain or dairy products. Good crops mean greater ability to buy and use manufactures, merchandise, and livelier trade. During the summer season, especially, one class of dealers in farm products, having large stocks on hand, are interested in circulating reports of poor crops to keep up prices. Another class, those short of stock to fill contracts, foster the most favorable reports possible, to depress prices. —Many years ago the *American Agriculturist* started the project of securing, through reliable correspondents all over the country, regular, accurate reports, and maintained the system until it seemed desirable to have it undertaken on a still larger scale by the General Government, and our plans, plates, list of correspondents, etc., were turned over freely to the Agricultural Bureau at Washington. But private enterprise, and organized effort are now supplying much that is needed. Among others, the N. Y. State Agr. Society sent out, May 6, a blank Circular to five trustworthy correspondents in each county of the State, for the information given below. Aug. 1 another Circular will go, inquiring as to results of the hay and grain harvests, and autumn crop prospects; and Nov. 1 another inquiry as to all seeding, harvesting fall crops, etc. We hope these calls will be considered by every one receiving them, and faithful reports given:

New York Report for the Second Week of May, 1881.

WINTER GRAIN.—Condition: 15 reports "very good"; 67 "good"; 30 "poor"; 3 "very poor".. Acreage as compared with last year: 22 reports of much more; 27 of more; 54 of about the same; 8 of less; 2 of much less.

SEASON thus far, for spring seeding: 90 favorable; 50 unfavorable....for Grass: 63 favorable; 50 unfavorable ....for Fruit: 90 favorable; 12 unfavorable. (The plentiful rains further on, very greatly changed the grass prospects for the better.)

SPRING CROPS.—Acreage as compared with 1880: *Barley*, 19 reports of more; 57 of the same; 8 of less.... *Potatoes*, 66 reports of more; 38 of the same; 8 of less .... *Tobacco*, 7 reports of more; 10 of the same; 0 of less .... *Hops*, 18 reports of more; 25 of same; 2 of less.

COWS.—Number as compared with last year: 16 reports of greater; 60 of about the same; 34 of less....To the question has there been any considerable occurrence of Abortion in Cows: 98 reports say "no," and 11 "yes."

SHEEP.—Number to be shorn as compared with last year: 28 reports say more; 57 say about the same; and 16 say less....As to this spring's product of lambs, 52 reports say good; 15 very good; 17 say average; 13 poor.

Of Oats and Corn not many reports made, but generally favorable when referred to.

Worthy of Your Attention.

[As constantly announced, the General Premiums offered for Volume **40**, extended *only* from Sept. 1, 1880 to June 30, 1881, this period being the limit of the contracts for obtaining the chief articles at rates that enabled the Publishers to present them on the liberal terms named in the Premium List. This will explain why Premium articles, called for after June 30, can not be supplied. A few extra articles, most in demand, have been secured to meet the calls from premium canvassers in Australia, New Zealand, and other distant points where the *American Agriculturist* has a very large circulation.

FOUR VALUABLE

Special Premiums,

For JULY and AUGUST.

No. 1.—Leland's Farm Homes,

In-Doors and Out-Doors.

A Beautiful and most Valuable Book, for every home, in Village and City, as well as on the farm. It is full of practical, useful information, given in terse pleasing style, by one who knows by experience what to do, how to do it, and is well able to tell others how. It is handsomely printed on tinted paper, bound in extra cloth, bevelled edges, black and gold. Price $1.50. *Every family should have a copy for reading and reference.*

A FREE COPY: Any subscriber to the *American Agriculturist* who will, during July and August (only), send a new subscription to the *American Agriculturist* for one year, at the regular rate, $1.50, will be *presented* with a copy of "Leland's Farm Homes," and receive it free by mail, at any place in the United States or British America. If sent to other foreign lands, 17 cents extra, or 9 pence sterling, will be required for the extra postage.

NOTE.—The offer of this Special Premium was withdrawn May 1, but in response to numerous requests, we have arranged to renew the offer for July and August only. The new subscriptions under this offer can begin with this (July) number, or with any previous number back to January, or before.

No. 3.—Best Strawberry Plants.

Sent safely in good order, by mail, to any part of the United States and Territories, in July or August. Plants grown in pots sent by Express.

The most promising new variety of Strawberries for garden and field culture, for Home use and for Market, for various soils and climates, is the **"BIDWELL."** It has been tested in widely separated localities with the highest satisfaction, and, until recently, very high prices have been offered for single plants. There is now sufficient stock produced to reduce the price to $1.00 per dozen plants. At this price they are securely packed, and sent safely by mail, post-paid, to the most distant Territory. They will multiply largely this year, and if set soon will yield fruit next year. If pot-grown plants are set, they will multiply rapidly at once, and fruit largely next year. When desired, pot-grown plants will be carefully boxed and forwarded by Express, at the same price, $1.00 per dozen; but in this case the recipient will pay the expressage on arrival. The plants will be put up and forwarded for us by Mr. E. P. Roe, whose long and successful experience will secure their best careful packing.

A DOZEN PLANTS FREE.—In addition to supplying the plants at the above prices, we have arranged for making a **PRESENT** of **One Dozen of the Bidwell Strawberry Plants,** to be sent by Mail or Express, as above, to any one forwarding us, during July or August, a *new* subscription to the *American Agriculturist* at the regular price of $1.50 a year. The subscription may begin with July or with any previous number back to January or before.

No. 5.—Silos and Ensilage.

On account of the present general interest in this subject, and its importance, the Publishers have arranged to present and send post-paid a copy of Dr. Bailey's BOOK OF ENSILAGE to any person who shall, during July or August, forward one new subscription to the *American Agriculturist* at the regular rate of $1.50 a year. The subscription may begin with this (July) or any previous number.

No. 4.—"Trichine Tester," & Microscope.

This valuable new Instrument, which is described and illustrated on page 273, is important to every one using or dealing in Pork. It is also useful for testing other kinds of flesh and fish, which sometimes contain trichines. Aside from these particular applications, the Instrument is an admirable *Microscope* for most ordinary uses, and as a microscope alone, is one of the cheapest and best forms for convenient use. It is very strongly made, the frame being of heavy brass, nickel plated.—Sent safely by mail to any part of the United States. The price, $2.50, which includes postage, is very low for so complete and well made an instrument.

SENT FREE, also: To any one forwarding *three* subscriptions to the *American Agriculturist*, during July or August, at the regular rate of $1.50 a year each, the Publishers will **present** and send post-paid one of the above Instruments. The subscriptions may begin with July, or at any previous date desired, back to January, or before.

A Gratifying Showing, for all interested, as hundreds of thousands of people are, is the result of the thorough Official Examination, just completed by State Superintendent Fairman, of the financial condition of the Mutual Life Insurance Company of New York. The Company's own showing (see our March No.), gave a surplus of some $11,000,000. The Official examination states the Assets to be $92,060,503.65; Liabilities, $79,954,620.26; *Surplus*, $12,105,883.39, or a million dollars more than the officers of the Company claimed.

Prices in 1880 and 1881.—The Proposals for Indian Supplies, amounting to near four million dollars, are now being examined in this City by the Board of Indian Commissioners. The bids come from large operators, who acquaint themselves with the probable supplies and demand, with the crop prospects, the loss of animals during winter, etc. A comparison of the lowest bids for two years will interest many—we give all we have space for:

For each 100 *lbs. delivered at*					1880.	'81.
Beef Cattle, live weight,				Yankton, Dak.	$2.99	$3.34
"	"	"	"	Santee, Neb.	2.70	3.27
"	"	"	"	U. Mo. R. (Ft.Pk)	2.44	2.64
"	"	"	"	Mescalaro, N. Mex	3.25	2.80
"	"	"	"	San Carlos, Ariz.	2.77	3.73
Bacon,				Sioux City	7.07	10.19
"				Kansas City	7.60	10.87
Mess Pork, (bbl.)				Chicago	8.40	17.60
"				Sioux City	11.99	18.15
Lard, (100 lbs.)				St. Louis	9.37	13.50
Corn,	"			Arkansas City	.68	.73
Oats,	"			Santee, Neb	1.10	1.65
Flour,	"			Duluth	2 39	2.49
"	"			Arkansas City	2.49	2.37
Coffee,	"			New York	14.94	11.16
Salt,	"			Sioux City	.75	.70

A Combination Force Pump.—Some handy contrivance for throwing water is almost a necessity upon a farm or other country place. We must use poison or have no potatoes, and this makes a syringe a necessity; besides this, the application of other poisons, the washing of windows and carriages, the watering of flower-beds and various other uses bring such a pump into frequent demand. Moreover the having at hand such an implement in case of fire is a great satisfaction. Lewis' Combination Force Pump, is readily adapted to meet all these uses, its changes are easily made, and its moderate price is not its least commendation.

American Jerseys—Recent Sales and Remarkable Prices.

The Special Combination Sale of pure-bred Jersey Cattle, held at the American Institute Building, New York, by Peter C. Kellogg & Co., on the 17th and 18th of May, is worthy of particular notice, from the undoubted merit of many of the animals offered, and the unprecedented prices for which they were sold. The bidding was spirited, and breeders were evidently determined to secure for their herds the best representatives of tested butter-making families. A number of animals were sold that, although purely bred, and registered in the Jersey Cattle Club Herd Register, or entitled to registry there, sold at very low prices, the demand being only for those that had been proved to be of exceptional excellence as butter makers, or that were descended from ancestors that were recognized as representing the best butter-making strains of blood. We give below a list of the animals sold for $300 and over, with Herd-Book numbers, ages, names of buyers, and prices:

COWS.

Nameless Girl, 11623, (2 y'rs) T. A. Havemeyer, N.Y. $300
Nux, 11622, (2 yr's) W. A. Conover, Newark, N. J. 315
Dedii, 5877, (5 y'rs) Moulton Bros., W. Randolph, Vt. 360
Little Maid, 6.99, (4 y'rs) " " " 310
Advice, 12093 (1 y'r) H. N. Strong 300
Bonnie Grisette, 6979 (3 y'rs) T. A. Havemeyer, N. Y. 800
Leda, 799 (12 y'rs) Wm. Simpson, New York.....3,000
Satin, 10329 (3 y'rs) T. A. Havemeyer, New York....2,050
Heifer calf out of Satin (20 d's) Wm. B. McCready, Saugatuck, Conn..... 730
Favorite's May, 8662, (2 y'rs) T. A. Havemeyer, N. Y.1,625
Pyreha 2d, (9561) 2 y'rs) Moulton Bros., Vt 850
Phrynette, 9089 (2 y'rs) P. Sgobel, New York..... 675
Juez Ado, 9090) (2 y'rs) " " 555
Petronella, 8819 (2 y'rs) Moulton Bros., W. Ran'h, Vt.2,050
Malita, 5169 (5 y'rs) and heifer calf, T. A. Have'r, N.Y.1,300
Queen of the Farm, 9069 (6 y'rs) imported, John J. Holly, Plainfield, N. J 1,300
Token, 10260 (2 y'rs) T. A. Havemeyer, New York... 445
Jessie of Ipswich, 2883 (8 y'rs) " " ... 300
Mantissa, 10457 (4 y'rs) " " ... 320
Snow, 7386 (6 y'rs) imported, " " ... 400
Leunirette, 10059 (2 y'rs) Moulton Bros., Vt..... 355
Flora D, 11192 (2 y'rs) T. A. Havemeyer, New York.. 335
Daisy Maid of Bloomfield, 8352 (3 y'rs) " " ..1,200
Phyllis, 10657 (1 y'r) " " .. 325
Pansy of Bloomfield, 7214 (3 y'rs) Moulton Bros., Vt. 310
Pierrot's Rose Bud, 10133 (4 y'rs) Edwin Davis, N. Y. 660
Nonesuch of Jersey, 9982 (5 y'rs) imp'd, P. Dana, N.Y. 500
Lady Golddust, 7718 (3 y'rs) W. Watson, Wes'r, N.Y. 330
Princess Thessaly, 11895 (2 mos) Paul Dana, N. Y.... 310

BULLS.

Advance, 5624 (1 y'r) J. L. Stetineus, Cincinnati, O.. 330
Hohokus, 5569 (1 y'r) P. Sgobel, New York.....1,000
Neighbor, 5570 (4 mos) W. Watson, Westche'r, N.Y. 315

Average for the 127 lots sold, five calves sold with their dams, not averaged separately..... .....$291.15
Average for 112 females (5 with calves at side).....306.78
" " 15 bulls.....174.50
Total.....$36,977.00

Mr. A. B. Darling's "pure Alphea" cow "Leda," although 12 years old, sold to Mr. Simpson for $3,000, made the highest price known for a Jersey cow at auction. Her sire "Jupiter" (93) was a full brother of "Alphea" (171), a cow which gave as high as 24¼ quarts of milk a day, and when giving 21 quarts per day, made at the rate of 21¼ lbs. of butter a week. Leda's dam, "Europa," (176) was got by "Jupiter" out of "Alphea." The celebrated cow "Eurotas" (2454) that made 778 lbs. 1 oz. of butter, and dropped a calf within a year of the commencement of the test, was also a daughter of "Europa." "Leda" was in calf to "Duke of Darlington" (2460), (a son of "Sarpedon" (930) and "Eurotas,") and Mr. Darling offered, before the sale, to pay the buyer $1,000 for her calf, when due, at his own risk.

"Polonius" (2513), a son of "Leda," by "Sarpedon," was sold at Mr. Wing's sale, May 5th, for $4,500. As there are but five or six "pure Alphea" cows living, all of which, with the exception of her dam "Europa," are descended from "Leda," the price at which "Leda" sold is not surprising.

"Satin" (10329), bred by A. B. Darling, New York, the next on the list of high prices, was a daughter of "Duke of Darlington," and in calf to "Duke of Scituate" (3623), a son of "Jersey Belle of Scituate" (7828), who tested 705 lbs. of butter in a year, and as high as 25 lbs. 3 oz. in a single week. "Oriole" (2563) by imp. "Dolphin 2d" (468), the dam of "Satin" is a daughter of "Venus" (168), imported by Col. R. M. Hoe. "Satin's" heifer calf (20 days' old), that sold for $730, was got by "Duke of Scituate." "Petronella" (8819), offered by John J. Holly, of New Jersey, divides the honor with "Satin," in making the highest price ($2,050) at public sale next to "Leda." "Petronella" was a daughter of "Polonius," the $4,500 bull at Mr. Wings' sale, and her dam, "Louvie 3d," was by "Rex" (1330), a son of "Couch's Lily," who make 71 lbs. of butter in 31 days. "Petronella" was in calf to "Uproar" (4609), a son of "Duke of Darlington" and "Euphrates" (9778).

Another representative of Mr. John J. Holly's herd, "Favorite's May" (8662), made the next highest price, $1,625. Her sire, "Much Ado" (2405), was got by "Dash of Glastonbury" (1959), out of imported "Dandelion" (2521). Her dam, "Favorite of the Elms" (1655), made 16¼ lbs. of butter in seven days, and is noted for uniform and persistent milking qualities. Imported "Dandelion" has given as high as 26 quarts of milk, and her daughter, at 4 years old, made 14 lbs. of butter in 7 days.

"Malita" (5169), and "Queen of the Farm" (9069), came next on the roll of honor at $1,300 each. "Malita" was another contribution from the choice herd of John J. Holly, at Plainfield, N. J. Her sire, "Alpheus" (1168), (by "Mercury" (432), out of "Europa") was full brother to "Sarpedon," the sire of "Polonius," the highest priced Jersey bull on record. "Malita" was in calf to "Uproar," a grandson of "Eurotas," and son of "Euphrates." "Queen of the Farm" was imported from the Island of Jersey in 1879. She has a butter record of 11 lbs. in 7 days, after her second calf, and of 13 lbs. 14 oz. after her third calf.

"Dairy Maid of Bloomfield" (8352), was sold on her record as a butter-maker and persistent milker. With her first calf, as a two-year-old, she made 10¼ lbs. of butter in six days, and would not go dry before dropping her last calf, April 22d. She was giving, at time of sale, 18 qts., and gives promise of a high record when mature.

As to the bulls named in our list of prices, we find that "Advance" (5624), was got by "Pedro" (3187), (a son of "Domino of Darlington" (2459) and "Eurotas"), and his dam, "Josephine 2d" (3296), had been awarded first prize at the N. Y. State Show in 1872 and 1878, and she was also first at the International Dairy Show in 1878. She was also highly commended at the Centennial Exhibition by the Judges of Jersey Cattle.

"Hohokus" (5569), the highest priced bull, combined the blood of "Jersey Belle of Scituate" with that of "Alphea." His sire, "Duke of Scituate," was by "Pharos, Jr.," (3621), out of "Jersey Belle of Scituate." His dam, "Blossom of Darlington" (7111), was got by "Domino of Darlington," a son of "Sarpedon" and "Beauty of Darlington" (5736). "Sarpedon" was a "pure Alphea" bull, he being a son of "Mercury" and "Europa," the dam of "Leda" and "Eurotas." The granddam of "Hohokus" was "Vesta" (1235), who sold at Col. Hoe's sale in 1873 for $700, which was the highest price that had been paid for a Jersey at that time. "Neighbor" (5570), a fawn and white, 4 mos. old calf, was full brother to "Satin," whose pedigree is given above.

A pleasant incident of the sale was the award of the "Breeder's Cup," donated by several members of the Cattle Club, to the breeder making the highest average at the sale. The cup was won by Mr. John J. Holly, whose average on seven animals, reckoned under the rule as six and one half, (a calf sold with its dam to count as one half), was $1,085.39, while the average made by Mr. A. B. Darling on his seven animals, was $1,085.00, a difference of only *thirty-nine cents.*

A sale of imported Jerseys, and several young animals of "Alphea" blood, was held by Mr. Wm. Simpson, on the day following the Kellogg sale, (May 19th), at which the continued high prices were remarkable. The offering consisted of 19 cows and heifers, imported from Jersey by Mr. Simpson, last January—one "Alphea" heifer, named "Alphea Princess" (11158), and several yearlings and calves, by "Mercury," making in all 29 animals. We give a list of the animals sold for $300 and over, together with age, name of buyer, and price:

FEMALES.

Attilie 12031, imp'd, (2 y'rs) W. Ward, Petersb'g, Va.$300
Blossom 12013, imp., (8 y'rs) H. Lippincott, Cinnaminson, N. J 360
Alphea Duchess 11158, (8m.) P. Sgobel, Hyde P'k, N.Y.2225
Menthe 12032, imp. (2 y'rs) J. M. Richmond, Buff., N.Y 745
Anisette 12036, imp'd. (2 y's) E. Davis, Rye, N. Y.... 440
Little Gus 8776, (3 y'rs) W. D. Black..... 420
Sylvanie 12014, imp'd, (8 y'rs) W. Ward..... 400
Camma 12029, imp. (2 y'rs) J. M. Richmond, Buffalo. 805
Azienda 12030, imp. (2 y'rs) M. G. Clark, Geneva, Ill. 300
Malope 5872 (3 y'rs) Erwin Davis, Rye, N. Y..... 320
Ruby 12027, imp. (3 y'rs) J. M. Richmond, Buffalo .. 775
Chippeta 12037, imp. (2 y'rs) C. H. Kerner, Audubon Park, N. Y..... 400
Caroline 12019, imp. (6 y'rs) H. V. Crawford, Montgomery, N. Y..... 325
Imperatrice 12012, imp. (12 y'rs) J. L. Spofford, West Farms, N. Y..... 300
Prigge 8781 (2 y'rs) W. D. Black..... 400
Myrrhine 12033, imp. (2 y'rs) M. G. Clark, Geneva, Ill 405
Cherry 12016, imp. (7 y'rs) H. Lippincott, Cin'n, N.J. 620
Charella 12017, imp. (6 y'rs) H. V. Crawford, Mont'y. 350
Cassis 12028, imp. (2 y'rs) T. A. Havemeyer, N.York. 615
Zitella 8780 (2 y'rs) C. R. Christy, Stamford, Conn... 640
Compo 11844, (1 y'r) F. C. Havemeyer, New York.... 675
Verte 12023, imp. (5 y'rs) W. Ward..... 400

BULLS.

Grandson 5513, (1 y'r) W. D. Black, New Milford, Ct. 610
Intrepid 5511, (1 y'r) H. D. Parker, Boston, Mass.... 645
Connoisseur 5515, (1 y'r) A. D. Newell, N.Brun'k, N.J 750
Conundrum 5516, (9 mos.) C. R. Christy, Stamf'd, Ct. 325

25 females, average.....$519.60
4 bulls, " 582.50
29 animals, total average..... .... 528.28

This is said to be the highest average ever made in a public sale of Jerseys. "Alphea Duchess" (11158), was the great attraction of the sale, and the price made was the highest ever paid for a Jersey of her age. Her sire, "Mercury," is a son of "Alphea" and "Jupiter," her full brother. Her dam, "Torfrida" (3596), is full sister to "Eurotas," who has the highest record as a butter-maker for a year. "Torfrida" and "Eurotas" have the "Rioter 2d" out-cross, and therefore are not included in the list of strictly "pure Alpheas." The performance of "Eurotas" is a sufficient proof of the correctness of her breeding. Of the other females sold, "Zitella," "Malope," and "Little Gus" were got by "Mercury." "Grandson's" dam was "Europa," the dam of "Eurotas" and "Torfrida." "Intrepid" was got by "Mercury." "Connoisseur" by a son of "Mercury;" the dam and sire of "Conundrum" were both by "Mercury."

These sales show an increasing interest in Jerseys, and the many breeders that are seeking merit that is based on performance in butter-making qualities may even lead to a legitimate advance in prices. If the high prices now prevailing for tested and approved strains of blood do not lead to speculation that must always interfere with the true development of desired qualities, the far-sighted breeders who can select with skill, and weed out undesirable variations with a vigorous hand, have reason to be encouraged in their efforts to improve one of our most valuable dairy breeds.

Pocket Scales.—The idea of "Pocket Scales" seems about as absurd as that of a "Pocket Wagon-Jack." Still, "Parker's Pocket Scales" may easily be carried in the pocket, if one wishes, as it is not larger or heavier than an ordinary pocket knife, and will weigh up to eight pounds with as much accuracy as do the larger spring balances. Still smaller is "Parker's Postal Scales," which allow one to tell whether his letter will go with a single post-stamp, or how much he must pay, up to eight ounces, and is a very convenient affair to keep upon the desk, or if one chooses to do so, to carry in the pocket. It folds up into a very small space.

Tree Pruning.—A Treatise on Pruning Forest and Ornamental Trees, by A. DesCars, translated by Charles L. Sargent, Professor of Arboriculture in Harvard College, at the request of the Massachusetts Society for the Promotion of Agriculture, by whom it is published. A western or down-east woodsman would say that there was but one way to prune a forest tree, and that was just above the root. We have been so busily engaged in cutting away our forests, that it is only within a few years that serious attention has been given to forest tree planting. Recently there have been large plantings of forest trees, and this work comes as a timely answer to the question, "what shall we do with our trees now that we have planted them?" That those who have planted trees for timber, rather than fuel, may bring them into profit much more certainly by so treating them as to put the growth where it is most needed, should be self evident. That the same quantity of wood is more valuable in one straight stick than distributed through several crooked ones, should need no argument. We have not needed to prune forest trees heretofore, and have had no literature on the subject. But hereafter we must grow timber, and to raise it properly, it must be cared for, and this book comes as a timely aid. It shows the methods followed in a country where forestry is not only a business, but a profession. The work is abundantly illustrated by engravings, which not only show what to do, but the effects of doing what ought not to be done. We do not know who has the charge of "hacking" at the trees of our cities, but if street trees could be pruned according to the teachings of this work, it would be better for the trees, and save many tree lovers the pain caused by the butchery they are obliged to witness. Copies of the work can be obtained at the office of this Journal for 75 cents, post-paid.

Bailey's Practical Tree Trimmer.—One who has had much practice in pruning, soon learns that there is a much better implement than the saw for limbs of two or three inches and less in thickness. We have these many years advised the use of a heavy broad chisel made for the purpose. This, when of the proper size and shape, driven from below, upwards, removes small branches with great ease, and leaves a perfectly smooth wound that requires no after trimming. In Bailey's "Trimmer" the heavy chisel is attached to a long and stout iron rod, which runs through a light wooden handle, and, instead of using a mallet, a "sliding hammer" is attached near the lower end of the rod, which has sufficient momentum, when properly driven, to communicate sharp, forcible blows to the chisel. This contrivance allows the operator to remove the branches beyond the reach of the ordinary pruning chisel, with great ease, and is an advantage in having the chisel and mallet all in one piece. It is in fact our old pruning chisel extended and made more useful. It is made with handles four feet long, and increasing by the half foot up to six feet in length. We have tried the implement sufficiently to be assured that in this "Tree Trimmer" the Remington Agricultural Works have added another to the many useful things made at their extensive establishment.

The Uses of Raw Hide.—Mrs. "M. A. S.," Yakima Co., Wash. Terr., writes of the excellence of chairs with bottoms made of raw hide, which are in common use in her vicinity. The hide is cut into narrow strips, the hair removed, and these strips are woven back and forth to make the seat, which is very durable. Our correspondent's husband made her a rocking chair with both the back and seat woven of strips of raw hide, which she finds very comfortable. The uses of raw hide can only be appreciated by those who live in a "new country," as it answers a great variety of purposes in the house and on the farm. When fresh the hide is flexible, and manageable, but when dry it is as firm as a piece of sheet iron. The writer was for some time in Texas, and on the Mexican Frontier, where raw hide comes in play for a great variety of uses. Indeed the Mexican cart is built without a nail or a bolt, the parts being held together by binding with raw hide. The Texan teamster keeps a roll of raw hide strips in his wagon, and if he breaks a tongue, or a spoke gets loose, he soaks the raw hide over night and the next morning repairs damages without the aid of a blacksmith. It might with advantage be used upon farms in the older States for various repairs that now go to the blacksmith.

Spurrey.—"R. R.," Sussex Co., Del. This plant, which is much valued in Northern Europe, has never gained a place in our agriculture, and has nearly disappeared from that of Great Britain. As it is kept by some of our seedsmen there must be some demand for it, which is probably from Europeans who have been accustomed to it at home, and wish to try it here. It will grow upon very poor soils, and its chief use is as a green manure in enriching sandy, sterile fields, for which purpose we usually employ buckwheat. It may be sown at any time from early spring until after midsummer, and two or more crops, following one another, are used in Europe. The seed is sown broad-cast, at the rate of 15 lbs. to the acre, and slightly harrowed in. In some parts of Europe it is cultivated for the seeds, from which are extracted an oil which is useful for burning.

American Butter Wrapper—Is the latest novelty in dairy supplies. The old method of wrapping butter in cloths, while it makes a neat and tempting package, does not perfectly exclude the air. Now comes the butter wrapper, claiming to be air and water proof. It is a very perfect thin Manilla paper, treated with wax of some kind, which quite fills its pores and makes it semi-transparent. The butter is molded in oblong blocks, and when closely wrapped in this paper is secured from all action of the air, and from acquiring any odor. The makers claim that this wrapper can be furnished at less than the cost of washing cloths.

BEST GOODS LOWEST PRICES

WHEAT

TRADE QUALITY P PURITY NOT QUANTITY PATENTED MAY 2D 1871 MARK.

For $12.00 a Farmer can buy a formula (520 lb) of POWELL'S PREPARED CHEMICALS for WHEAT.

This, when mixed at home, makes ONE TON of SUPERIOR PHOSPHATE, which is equal in plant-life and as certain of successful crop production as many of the high-priced Phosphates.

No trouble to mix; no extra expense. Full directions.

Powell's Chemicals have been thoroughly tried, give universal satisfaction, and we offer leading farmers in every state as reference.

Send for Pamphlet. BEWARE OF IMITATIONS.

BROWN CHEMICAL CO., Baltimore, Md., Sole Proprietors.

MANUFACTURERS OF { Powell's Tip-Top Bone Fertilizer, price only $30 a ton net cash. Pure Bone Meal, Pure Dissolved Bone, Potash, Ammonia and all high-grade Fertilizing Materials.

FERTILIZERS

KNAPP'S

EXTRACT of ROOTS

FOR MAKING

ROOT BEER.

This Extract makes a most healthy, pleasant, and economical beverage, being manufactured from ROOTS and HERBS. It is especially recommended to Invalids, and as a HARVEST DRINK is unsurpassed. ROOT BEER MAKERS, DRUGGISTS, PROPRIETORS of SALOONS, and PRIVATE FAMILIES will find it to their advantage to use KNAPP'S EXTRACT, as it will insure them a temperate, healthy and delicious beverage. This Extract, from which is made the popular drink known as KNAPP'S ROOT BEER, is put up in bottles at 25c, and 50c, $1.00, $2.50, and in half and gallon cans at $4.00 and $8.00, which makes 10, 25, 50, 200, 400, and 800 gallons of Beer. Sold by Druggists generally. P. B. KNAPP & SON, Proprietors, 362 Hudson Street, New York.

JOHNSTON & HOLLOWAY, Philadelphia, Pa., Agents.

PUBLISHED THIS DAY.

FULLER'S

SMALL FRUIT CULTURIST.

Rewritten, Enlarged, and brought fully up to the present time.

BY A. S. FULLER.

This is the first work exclusively devoted to Small Fruits and it continues to be the recognized authority. It is equally adapted to the needs and requirements of the private cultivator and the market grower. It gives every step from propagating the plant to marketing the fruit. 12 mo., tinted paper. Price, post-paid, $1.50.

ORANGE JUDD CO., Publishers, 751 Broadway, New York.

FARMERS, SPORTSMEN, EVERYBODY

Should have the

NEW SUN SHADE,

An article of wonderful ingenuity and simplicity, and fully adapted to the wants and uses of those who labor, or may be otherwise employed in the hot sun or rain. It leaves your hands free and head untouched, is easily adjusted, elevated, inclined, taken off or put on as a common hat. Full directions accompany each shade.

Price complete $1.15, or forwarded to any address in United States or Canadas, postage or express prepaid, for $1.40. Address SPORTSMEN'S DEPARTMENT,

ORANGE JUDD CO., 751 Broadway, New York

We have handled several brands of salt and have finally settled upon the Higgin's Eureka Salt as the best. We use it in all our creameries and sell it to our trade.

J. H. BROWN.

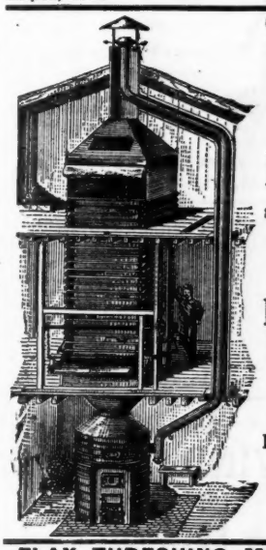
Wellsville, N. Y., March 2, 1881.

DUTCHESS NURSERIES.

(ESTABLISHED 1863.)

20,000 Potted BIDWELL,

and a full line of other varieties of Strawberries, potted or layers. CELERY PLANTS. All seasonable Garden Seeds. Prices upon application. W. L. FERRIS, JR. City Office and Seed Store, 385 & 387 Main Street, Poughkeepsie, N. Y.



The Celebrated

Automatic Fruit Evaporator

Special Size for Farmers.

Price $100.

MANUFACTURED BY

McFarland & Wilt

112 N. Sixth St.

Philadelphia.

Send for Illustrated Circular.

D. F. LITTLEFIELD

110-14 Main St.

SACO, MAINE.

Sole Agent for New England.

FLAX THRESHING MADE EASY!

J. I. CASE T. M. CO.'S NEW

ACHIEVER

Does Fast, Clean, Saving Work in Flax

AS WELL AS IN GRAIN, TIMOTHY AND CLOVER.

AT THE HEAD OF THE CLASS IN ALL!

Circulars sent free. Address, Racine, Wis.

POULTRY WORLD.

A monthly magazine, the oldest, largest, and best periodical devoted entirely to poultry ever published. Splendidly illustrated. $1.25 per year. Also the *American Poultry Yard*, the only weekly paper devoted entirely to poultry in existence. $1.50 per year. Both papers for $2.00. A sample copy of both mailed on receipt of nine cents in postage stamps.

Address H. H. STODDARD, HARTFORD, CT.

ESSEX PIGS A Specialty.

75 to 100 Pedigree Pigs for delivery in June, six weeks to two months old. Write for prices.

Also Brown Leghorn (prize winners) EGGS, @ $1 per doz., and B. B. R. G. Bantam Eggs for Hatching (imported), @ $1.50 per doz., in new baskets. Safe arrival guaranteed.

C. W. CANFIELD, Bradford Co., Athens, Pa.

ESSEX PIGS.

COTSWOLD SHEEP.

Gold Medal and Clawson Wheat.

Cabbage Plants by the Million.

Please send for Circular.

Address JOSEPH HARRIS,

Moreton Farm, Rochester, N. Y.

Building Felt.

This water-proof material, resembling fine leather, is for outside work (*no tar substances used*) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples,

C. J. FAY, Camden, N. J.

LYON & HEALY

63 Monroe St., Chicago.

Will send prepaid to any address their BAND CATALOGUE, for 1881, 200 pages. 210 Engravings of Instruments, Suits, Caps, Belts, Pompons, Epaulets, Cap-Lamps, Stands, Drum Major's Staffs, and Hats, Sundry Band Outfits, Repairing Materials, also includes Instruction and Exercises for Amateur Bands, and a Catalogue of Choice Band Music.

"ECLIPSE"

The Original Self-regulating Solid Wheel.

VICTORIOUS AT

Centennial '76, Paris '78, Australia '80.

Farm Pumping, Grinding, Irrigation, Drainage, etc.

The Strongest Mill Built.

NINETEEN SIZES. 3/4 to 40 Horse Power. TESTED 14 YEARS.

Send for Catalogue.

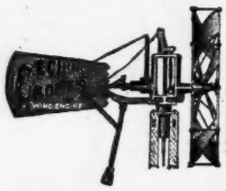
ADOPTED BY *U. S. Government* and all LEADING RAILROADS.

ECLIPSE WIND ENGINE CO.,
BELOIT, WIS., U. S. A.

We manufacture the Old Reliable, well known Solid WHEEL STOVER WIND MILL, and O. E. WINGER'S IMPROVED DOUBLE-FACED GRINDER, which is operated by pumping windmills, a novel and perfect rapid grinding mill for grinding all kinds of grain. It is designed also to be operated by any kind of power, with belt, tumbling shaft, or by one or two horses with a sweep attached. Agents wanted. Send for catalogue.

E. B. WINGER,
SUCCESSOR TO STOVER WIND ENGINE CO.,
Freeport, Ill., U. S. A.

Croft's Improved IRON WIND ENGINE,



Manufactured by

E. C. LEFFEL,

Also Dealer in Pumps, Tanks, Pipes, Corn Shellers, Corn Grinders, Power Converters, with both Lever and Rotary Motion Applied to Wind Mill Power, and everything pertaining to Wind Engine Machinery.
Send for Circular.

SPRINGFIELD, O.

THE WATERTOWN Windmill.

THE BEST IN USE.
Write for descriptive catalogue A.

H. H. BABCOCK & SONS,
Watertown, N. Y,

EWALD OVER,

MANUFACTURER OF

VICTOR ONE-HORSE DRILLS FOR SOWING

WHEAT, OATS, RYE, COTTON, RICE AND BARLEY.

INDIANAPOLIS, Ind.
☞ SEND FOR CIRCULARS.

STAR CANE MILL.

Worth Double the Money!

Grinds Twice as Fast!

Double the Capacity.

Cheapest Mill Made.

Warranted in Every Respect.

Send for description and price.

—Manufactured by—

J. A. FIELD & CO.,
8th and Howard Sts.,
ST. LOUIS, MO.

HEEBNER'S LEVEL TREAD HORSE POWER WITH SPEED REGULATOR.

Heebner's Improved Little Giant Threshing Machine.

"Union" Feed Cutter, Circular and Drag Saw Machine, etc., Send for Catalogue. **Heebner & Sons,** Lansdale, Mont. Co., Pa.

Received Medal AND HIGHEST AWARD

OF MERIT AT CENTENNIAL.

Send for Catalogue

STEAM ENGINES,

A. B. FARQUHAR, York, Pa.,

Cheapest and best for all purposes—simple, strong, and durable. Also Horse Powers and Gin Gear.

SAW, GRIST AND COB MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

Fig. 1.

Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road.

Boiler Explosion. Dept. of Inspection.

Fig. 2.

Send for Catalogue.

The Farquhar Separator

(Warranted)

Penna. Agricultural Works, York, Pa. Lightest draft, most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.

Steam Engines, Horse Power and Threshers of all kinds. Also, Ploughs, Cultivators, &c., &c.

AND HIGHEST PRIZE AWARDED SEPARATORS,

THE SILVER MEDAL AT Paris Exposition.

Send for Illustrated Catalogue. *Address A. B. Farquhar, York, Pa*

The "PENNSYLVANIA" FORCE FEED GRAIN DRILLS

can always be relied upon. Special attention is called to our Fertilizer Attachment, which is a **positive force feed,** and warranted to sow with ABSOLUTE CERTAINTY where all others fail; also to the PENNA. ADJUSTABLE DRILL, which possesses every feature of any ordinary Drill, BESIDE the advantage of sowing both seed and fertilizers THREE OTHER WAYS.

Simple in construction, reasonable in price, and a model of completeness.

In sending for circular, please request our Drill Circular.
Address, PENNA. AGRL. WORKS, YORK, Penna.

Fit all drill boots, run level, cut *flat bottom* furrows, cover with *mellow* soil, and instead of *crowding the seed* into narrow rows but *one inch in width*, scatter it 3½, 4½, and 5 ins.; the plants thus standing *wider* apart, have more ROOM TO STOOL, derive more nourishment from the soil, become more vigorous, and produce better developed average heads. Successfully used in 15 States, on 21 different makes of drills. Send for Illustrated Circular with Testimonials to **J. A. JONES, York, Pa.**

Adjustable drills, to which these points are *especially* adapted, manufactured at the PENNA. AGRICULTURAL WORKS, YORK, PA.

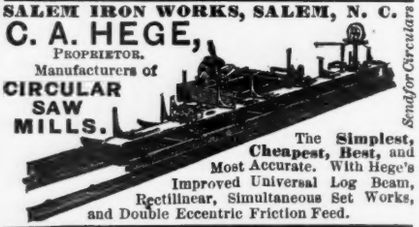
SALEM IRON WORKS, SALEM, N. C.

C. A. HEGE,

PROPRIETOR.

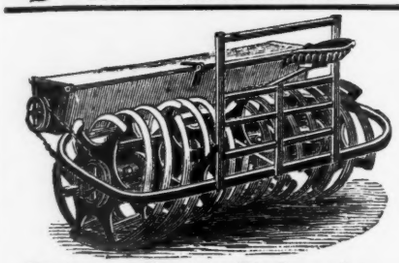
Manufacturers of

CIRCULAR SAW MILLS.



Send for Circulars

The **Simplest, Cheapest, Best,** and Most Accurate. With Hege's Improved Universal Log Beam, Rectilinear, Simultaneous Set Works, and Double Eccentric Friction Feed.



Chicago Screw Pulverizer

Puts in Crops at Half the Cost of the Plow.

Over 35,000 Acres put in by them in 1880.

PAMPHLETS FREE—CUTS AND LETTERS.

Address, **Chicago Scraper & Ditcher Co.,**
34 Metropolitan Block, Chicago.

NICHOLS, SHEPARD & CO

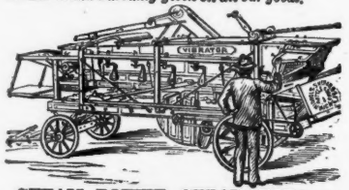
Battle Creek, Michigan,
MANUFACTURERS OF THE ONLY GENUINE

VIBRATOR

THRESHERS, Traction and Plain Engines and Horse-Powers.

Most Complete Thresher Factory in the World. } Established 1848

32 YEARS *of continuous and successful business,* without change of name, management, or location, *to "back up" the broad warranty given on all our goods.*



STEAM-POWER SEPARATORS and **Complete Steam Outfits** *of matchless qualities. Finest* **Traction Engines** and **Plain Engines** ever seen in the American market.

A multitude of special features and improvements for 1881, together with *superior qualities in construction and materials* not dreamed of by other makers.

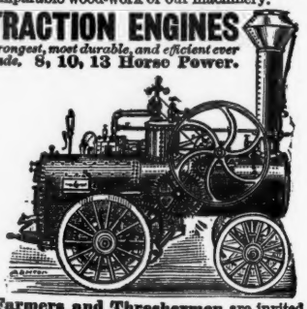
Four sizes of Separators, from **6 to 12 horse** capacity, *for steam or horse power.*

Two styles of "Mounted" Horse-Powers.

7,500,000 Feet of Selected Lumber *(from three to six years air-dried)* constantly on hand, from which is built the incomparable wood-work of our machinery.

TRACTION ENGINES

Strongest, most durable, and efficient ever made. **8, 10, 13 Horse Power.**



Farmers and Threshermen are invited to investigate this *matchless* Threshing Machinery. Circulars sent free. Address

NICHOLS, SHEPARD & CO.
Battle Creek, Michigan.

Farm Grist Mills

And Corn Shellers.

OVER 25 000 NOW IN USE.

Every Machine is fully Warranted. Price of Mills, $13 to $35. Shellers, $5. Don't buy a **Mill** or **Sheller** until you have seen our terms and Illustrated Circular. Address

LIVINGSTON & CO., Iron Founders, Pittsburgh, Pa.

MICA AXLE GREASE

PATENTED 1874

Composed largely of powdered Mica or Isinglass, is the **BEST** and **CHEAPEST** lubricator in the world. It is the **best** because it **does not gum, but forms a highly polished surface over the axle, reducing friction and lightening the draft.** It is the **cheapest** because it **costs no more than inferior brands, and one box will do the work of two of any other Axle Grease made.** It answers equally as well for Harvesters, Mill Gearing, Threshing Machines, Corn-Planters, Carriages, Buggies, etc., etc., as for Wagons. It is **GUARANTEED to contain no Petroleum.** For sale by all first-class dealers. ☞ Our *Pocket Cyclopedia of Things Worth Knowing* mailed free.

MICA MANUFACTURING CO.
31 Michigan Avenue, Chicago, Illinois.

A book devoted entirely to PLYMOUTH ROCK fowls, also a separate book on WHITE LEGHORNS, another on BROWN LEGHORNS, a book on curing POULTRY DISEASES, and another entitled HOW TO FEED FOWLS. Either of the above mailed for 25 cts., or all five for $1.00. Address the author

H. H. STODDARD, Hartford, Ct.

EVAPORATING FRUIT.

SENT FREE Treatise on improved methods. Tables, yields, prices, profits, and general statistics.
AMOS STOUFFER, Chambersburg, Pa.

I have used Higgin's Eureka Salt for the last year and consider it superior to any other salt, and I have tried them all. B. A. RINGER.
Lisbon Creamery, Lisbon, Iowa, March 14, 1881.

BUTTER PRINTER.

Self-gauging, more exact than weighing, and saves all the trouble. Also

CREAMERS,

Butter-Workers.

Send for Illustrated Circulars or call on

A. H. REID,
26 S. Sixteenth St., Phila., Pa.

LINCOLN PATENT

Channel Can Creamery.

Deep Setting Perfected without Ice.

Gets all the Cream in less than ten hours with ordinary well or running water, or in two hours with ice water, with less than ¼ the ice called for by any other process.

Special attention given to fitting out large creameries.

AGENTS WANTED. Send for circular.

WM. E. LINCOLN, Warren, Mass.

Rectangular and Square **BOX CHURNS**

Cheapest and Best. No inside fixtures, and *always reliable*. Six sizes of each kind made. Three sizes of the *Lever* Butter Worker made. Best material used, and every Churn and Butter Worker *warranted* exactly as represented. One Churn at wholesale where we have no agent. *Send Postal for Circulars.*
AGENTS WANTED.

CORNISH & CURTIS, Fort Atkinson, Wis.

THE "LILLY" BUTTER-WORKER

Sweeps the Field.

Special Premium of a Silver Medal at late Pennsylvania State Fair. **First Premium** at the late Connecticut State Fair, and at Dairymen's and County Fairs innumerable.

For ease and thorough work it **is absolutely unequaled.**
Circulars free.

C. H. R. TRIEBELS,
No. **316 Race Street,**
PHILADELPHIA, PA.

THOROUGHBRED & CROSS-BREED JERSEY STOCK.

10	Thoroughbred	Heifers and Cows, 3 to 8 years old.
5	"	Bulls, 8 months to 3 years old.
10	"	Heifers, 6 to 8 months old.
5	"	Yearlings past, in calf.

All the above are registered or entitled to registry in the A. J. C. Club Register.

25 Cross-breed Heifers and Cows 2 to 7 years old. These are a mixture of the two breeds, Jerseys and Ayrshires, the best Family or Butter Cows I have ever bred. All are rich milkers and butter-makers. Some of them 2-lb. Cows. No printed circulars issued. My prices range from $45 for a high grade Heifer Calf, to $500 for the best thoroughbred Cow. Purchasers are invited to examine the Stock in person, in preference to my own selection.

THOMAS FITCH, New London, Conn.

University of the State of New York.

American Veterinary College.

141 West 54th St. NEW YORK CITY.

The regular course of lectures commences in October, each year. Circular and information can be had on application to **A. LIAUTARD, M.D.V.S.,**
Dean of the Faculty.

DUTCH FRIESAN (Holstein) **BULL CALVES** for sale. From imported registered stock. Extra fine in shape and color. R. BURCH, W. Schuyler, Herk. Co., N. Y.

THE ORGANITA.

USING PAPER AS A VALVE.

THE FINEST INSTRUMENT OF THE KIND IN THE WORLD. Improved Automatic Shut-off and Double Expression Swell, Fourteen Notes; Full Sized Reeds, and Five Very Powerful Bellows. The Simplest Mechanical Musical Instrument now in the Market.

In response to the almost universal demand from our customers for a very powerful, simple, **low-priced,** and yet attractive instrument, we have produced the **"ORGANITA."** This instrument has **14 notes** or reeds, the same as all other similar instruments, (except our Organinas, which have 16) and is more **simple** in construction, more **attractive** in design, and much **louder** and more **melodious** than other instruments using paper as a valve. Our Organitas have a fine **black walnut** case, handsomely decorated, **five** very powerful bellows, full sized Cabinet Organ reeds, an improved automatic **shut off,** (which prevents the disagreeable noise heard in all other similar instruments when the end of the tune passes over the reeds), and a most ingenious and effective double **expression swell,** by means of which the tune is greatly varied. We obtain an effect from this instrument, owing to the peculiar position of the reeds and the construction of the expression box, **almost equal** to a regular valve instrument, and **far superior** to any other instrument using paper as a valve. Our Organita is almost as **loud** as a Cabinet Organ; and will play dance music loud enough for any medium sized hall. Its attractive shape, *simple* and *powerful* construction, and the various improvements it possesses over all other paper as a valve instruments, will place it at once, *far* in advance of all competitors, and we warrant it superior to any similar musical instrument extant. Price, in black walnut cases, with selection of music, **only $8.00.**

Over 300 tunes now ready.

SPECIAL TO AGENTS. Wishing an agent in every town we have concluded to offer a sample of the Organita to those who will push the sale for **only 5 dollars each.** Music 4 cents a foot. This price only applies to Agents. Money refunded if not as recommended.

MASSACHUSETTS ORGAN CO.,
57 Washington Street, Boston, Mass.

REAL COMFORT.

Every one should own a good Hammock. There is no other one article that will give one-half so much enjoyment in warm weather as a hammock stretched in the shade, and any one who does not own one misses much of the pleasure to be obtained in the summer months. If you are going on a vacation into the woods or to the seashore, take a Hammock with you; it will repay its cost hundreds of times. The most common Hammock in the country is the imported Mexican Grass Hammock; this is made of vegetable fibre and soon rots and unravels. The Hammock we offer is the **Gossamer Interwove Hammock,** made of doubled and twisted cotton cord, knott ed at every mesh. It can be cut almost to pieces, **yet it will not unravel,** and it will never rot, *lasting for years, and out-wearing a dozen Imported Hammocks.* They weigh almost nothing, and can be carried in the pocket. They are handsomely trimmed, and woven in beautiful **fast colors,** with **Patent Swivel Nickel Rings.** The regular price is $2.50; we will send a Gossamer Hammock to any address, by express, for $1.50; by mail, post-paid, 25 cents extra.

Address, **SPAULDING & CO., Gen'l Agents,** 57 Washington Street, Boston, Mass. The Trade Supplied.

WILHIDE BROS., York Road, Md., make the best RAT and MOUSE TRAPS. Guaranteed as represented. Agents wanted. Terms free.

ROBBINS FAMILY WASHER

is self-operating, requires no rubbing or other labor, does not wear or yellow the clothes, and works in any boiler or wash pot. Sent prepaid to any Railroad Express Office east of Rocky mountains on receipt of $3.50. Good Agents wanted, male and female. Send for illustrated circular, testimonials, references, &c., to

BISSELL M'F'G CO.,
50 Barclay St., New York, N. Y.

THE NEW SHEEP DIP.

Little's Chemical Fluid.

(Patented in U. S. July 3, 1877.)

The cheapest and best Dip of the day; is fast superseding all others.

Increased growth and improved quality of the wool more than pays cost of the Dip.

Price per gallon, $1.80; 10 gallons and upwards (adding 50c. per dray with can to Depot) at $1.60.

Send stamp for U. S. testimonials to

T. W. LAWFORD, Gen'l Agent,
No. 296 E. Chase Street, Baltimore, Md.

MUTH'S

HONEY EXTRACTOR

AND

UNCAPPING KNIFE.

The Extractor is made of all metal and is always ready for use, easily cleaned, and will last a life-time. In fact they have only to be used to be appreciated. Every Bee-Keeper should send for my circular giving details regarding the care of bees, and how to get the most Honey.

CHAS. F. MUTH, No. 976 Central Av., Cincinnati, O.

JERSEY RED PIGS.

CHOICE PIGS from choice stock, now ready to ship at reasonable prices. Price-List free.

J. S. COLLINS, Moorestown, N. J.

Galvanized Wire Nettings.

NEAT, CHEAP, DURABLE.

For enclosing Poultry Yards, Rabbit Hutches, and Fishing Ponds. Useful for Garden and Ornamental Fencing, and training floral vines.

Send for prices. Orders or letters of inquiry will receive prompt attention. Address,

BROCKNER, EVANS & CO.,

Manufacturers of Portable Poultry Houses, Steel Wire Bale Ties, Wire Work, etc. Importers of Galvanized Wire Nettings and Sheep Fencing, and Dealers in Patent Steel Barb Fence Wire.

New York Office, 422 West Street.
St. Louis Office, 819 and 823 North 2d Street.

Novelty Incubator.

I offer this as the **simplest, cheapest,** and **best** Incubator in the market. Costing less than 3 cts. per day for oil. **Holds 100 Eggs. Price, $30.00,** ready for shipment. Also **Novelty Hydro Mothers.** Prices, **$10.50 x $12.50.** Circulars giving full particulars on application.

A. G. ATKINS, Orange, N. J.

REMEDIES FOR HORSE DISEASES.

Prepared by PROF. J. A. GOING,

Veterinary Editor of the *Spirit of the Times.*

Going's Worm Destroyer.—Sure Relief from Worms or Bots.

Going's Tonic Powder.—The Best Preparation Known for Improving the Horse's Condition, Purifying the Blood, and Imparting to its Coat a Glossy, Shining Appearance.

Going's Colic Powder.—For Colic, Scouring (Chronic or Acute), or Inflammation of the Bowels. The Surest Remedy known to Veterinary Science.

Going's Cough Powder. — For Cough, Catarrh, Heaves, or Sore Throat.

These remedies are each put up in tin boxes, and will keep for an indefinite period. They will be sent by mail, free of charge, on receipt of **$1** per package. Circular with full directions enclosed. Address

PROF. J. A. GOING,
P. O. Box 938, New York City.

Prominent Agencies.—Portland, Me., James Bailey & Co.; Providence, R. I., T. W. Rounds & Co., 101 No. Main St.; Boston, Mass., G. C. Goodwin & Co., 38 Hanover St.; Worcester, Mass., R. McAleer, 223 Main St.; Philadelphia, Pa., M. Gallagher, 15 No. Ninth St.; Pittsburgh, Pa., Loughrey & Frew, 102 Wood St.; Baltimore, Md., Coleman & Rogers, 176 Baltimore St.; Richmond, Va., S. S. Cottrell & Co., 1,308 Main St.; Charleston, S. C., Chapeau & Heffron; Louisville, Ky., R. E. Miles, 52 W. Main St.; St. Louis, Mo., A. A. Mellier, 709 Washington Ave.; Cleveland, O., Dr. F. S. Slosson, 228 Superior St.; Detroit, Mich., Geo. E. McCulley and J. A. Taylor; Chicago, Ill., Van Schaack, Stevenson & Co., also S. Taylor & Co., 181 E. Madison St.; St. Paul, Minn., Noyes Bros. & Cutler; Boise City, Idaho, W. H. Nye & Co.; San Francisco, Cal., Main & Winchester, 214 Battery St.; Pueblo, Col., A. B. & H. W. Jones; New Orleans, La., A. W. Jackson, 873 Magazine St.

PIGS.

This spring's **Chester White, Berkshire, Yorkshire, Jersey Red, Poland-China,** and **Essex Pigs** were never finer, at the same time our prices are **unusually low.** Also **extra Cotswold** and **Southdown** Lambs. Do not fail to write us before purchasing. Illustrated Catalogue mailed on application.

BENSON, MAULE & CO., 223 Church St., Philadelphia, Penn.

★ ★ ★ ASK FOR ★ ★ ★

Wells, Richardson & Co's

PERFECTED BUTTER COLOR

It Gives Butter the gilt-edged color the year round. The largest Butter Buyers recommend its use. Thousands of Dairymen say **IT IS PERFECT.** Used by all the best Creameries. Awarded the International Diploma at N. Y. Dairy Fair. Ask your druggist or merchant for it; or write to ask what it is, what it costs, who uses it, where to get it. **WELLS, RICHARDSON & CO., Proprietors, Burlington, Vt.**

★ USE ★ ONLY ★ THIS ★ THE ★ FIRST ★ AND ★ THE ★ BEST ★

ENJOY A CUP OF GOOD TEA.

3½ LBS. of our celebrated

SUN-SUN CHOP TEA

SUN-SUN CHOP TEA,

the Finest and MOST BENEFICIAL Imported, sent by Mail on receipt of $2.50., postage paid. It is a BLACK TEA, with a GREEN TEA flavor. RECOMMENDED to SUIT ALL TASTES. Sample of any of our Teas by mail on receipt of 6 Cents. Postage-stamps taken. GOOD TEAS, 30c., 35c., and 40c. EXCELLENT TEAS, 50c. & 60c. All EXPRESS Charges PAID on $5.00 Tea orders.

The Great American Tea Co.,
IMPORTERS,
31 and 33 VESEY ST.,
P. O. Box 4235, NEW YORK.

FOR SALE.—A fine Dairy and Fruit Farm of 294 acres, one mile from Annapolis, Maryland. Dwelling of 12 rooms, and all farm buildings. Address
Mrs. N. E. BERRY, P. O. Box 106, Annapolis, Md.

FARMS. 150 Delaware Fruit and Grain Farms cheap. Catalogues free. A. P. GRIFFITH, Smyrna, Del.

GREAT BARGAINS to close an estate.—Several desirable and elegant city residences, 53,000 acres of timber lands and other property; a beautiful 100-acre home at Tom's River, N. J.; a 67-acre home 100 rods from our University. Write ISRAEL HALL, Ann Arbor, Mich., to describe the property you wish to know about.

CALIFORNIA LANDS,
large or small tracts; homes or investments, for sale by McAFEE BROTHERS, 202 Sansome St., San Francisco, Cal.

LAND! FARMS!! HOMES!!!
Over 1,000,000 Acres.
Mild Climate. Productive Soil. Low Prices. Easy Terms. Special inducements to actual settlers. For maps, circulars, &c., giving particulars free, address
THOMAS ESSEX, Land Commissioner,
Little Rock, Ark.

WISCONSIN LANDS
500,000 ACRES
ON THE LINE OF THE
WISCONSIN CENTRAL R. R.
For full particulars, which will be sent free, address
CHARLES L. COLBY, Land Commissioner, Milwaukee, Wis.

B. & M. R. R. in LAND NEBRASKA
600,000 Acres for Sale
Maps, Pamphlets and full information FREE.
Address Land Com'r B. & M. R. R., Lincoln, Neb.

IOWA FARMS
Over 1,000,000 Acres of Choice Farming Lands in the Near West.
For Sale by the
Iowa R. R. Land Co.
Cedar Rapids, Iowa.
Branch Office, 92 Randolph St., Chicago, Ill.

1,000,000 ACRES CHOICE LANDS IN
MINNESOTA & DAKOTA.
MINNESOTA
WISCONSIN
DAKOTA
FOR SALE AT $2.50 TO $6.00 PER ACRE ON
EASY TERMS. FREE FARE & LOW FREIGHT
TO PURCHASERS. FOR GUIDE CONTAINING
MAP & FULL INFORMATION, ADDRESS
CHAS. E. SIMMONS,
LAND COM'R C. & N.W. RY CHICAGO, ILL.

UNION PACIFIC RY. LANDS
IN NEBRASKA.
Fertile Soil, Long Summers, Short Winters.
Special Inducements to Land Seekers.
Those going West will find it to their advantage to send for information, which will be mailed free.
Apply to LEAVITT BURNHAM,
Land Commissioner U. P. Ry. Co.,
Omaha, Neb.
☞ Refer to this advertisement.

PENSIONS.
Every wound or injury, even by accident, or any disease, entitles a soldier of the late war to a pension. All Pensions by the law of January, 1879, begin BACK at date of discharge or death of the soldier. All entitled should apply at once. Thousands who are now drawing pension are entitled to an increase. Soldiers and widows of the war of 1812, and Mexican war are entitled to pensions. Thousands are yet entitled to bounty, but do not know it. Fees in all cases $10. Pay for every description of war claims collected. Employ an Attorney residing in Washington, who can give personal attention to your business. American and Foreign patents obtained on short notice. Land warrants PROCURED, bought and sold. Homestead claims prosecuted. Send two stamps for pension and bounty laws. Address, W. T. FITZGERALD, U. S. Claim Agent, Lock Box 422, Washington, D. C.

PENSIONS For SOLDIERS, widows, fathers, mothers or children. Thousands yet entitled. Pensions given for loss of finger, toe, eye or rupture, varicose veins or any Disease. Thousands of pensioners and soldiers entitled to INCREASE and BOUNTY. PATENTS procured for Inventors. Soldiers' land warrants *procured*, bought and sold. Soldiers and heirs apply for your rights at once. Send 2 stamps for "The Citizen-Soldier," and Pension and Bounty laws, blanks and instructions. We can refer to thousands of Pensioners and Clients. Address N. W. Fitzgerald & Co. PENSION & PATENT Att'ys, Lock Box 588, Washington, D. C.

Pensions The clerical force, working on Pension claims, has been greatly increased recently, and claimants have good cause to feel encouraged. We make the business a specialty, and having recently opened a Washington office, are certain that we can serve all to their entire satisfaction. Address us at the office most convenient.
MILO B. STEVENS & CO., Attorneys, &c.
Offices { Rooms 38 and 39 LeDroit Building, Washington, D.C. / Rooms 1 and 2 Case Building, Cleveland, Ohio. / Rooms 97 and 99 Metropolitan Block, Chicago, Ills. / Room 3 Abstract Building, Detroit, Mich.

E. & O. WARD, PRODUCE COMMISSION MERCHANTS.
(ESTABLISHED 1845.) Send for Circular of Great Value, giving full instructions for shipping
POULTRY, GAME, BUTTER, and PRODUCE.
No. 279 Washington St., N. Y.
Ref., *Irving National Bank*, New York City.

American Agriculturist
SUBSCRIPTION TERMS.

(**English** and **German** Edition at same Rates.)

For *One* or *Two* Subscriptions, *One Year*, the price will hereafter be (post-free) **$1.50** each, instead of $1.60.

[ALL POST FREE.]

Three Subscribers one year.....$4, or **$1.33** each.
Four Subscribers one year.....$5, or **$1.25** each.
Five Subscribers one year.....$6, or **$1.20** each.
Six Subscribers one year.....$7, or **$1.17** each.
Seven Subscribers one year.....$8, or **$1.14** each.
Eight Subscribers one year.....$9, or **$1.12** each.

Ten or more Subscribers, post-free, Only $1 each.

[A free copy to sender of club of 20 at $1 each.]

☞ **Single Numbers** sent, postpaid, for 15 cents each. Specimen numbers for examination sent, postpaid, for 10 cents each....☞ **Subscriptions** can begin at any time.

The Above Terms are for the United States and Territories, and British America. Add 14 cents extra per year for papers sent outside of the United States and British America, *except* to British Honduras. For the last named country the extra charge is 38 cts. per year, to cover extra postage, and Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 39 inclusive, supplied at $2 each, or $2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers in such volumes supplied at 10 cents each.—**Any Numbers** of the paper issued for 24 years past, sent post paid for 15 cents each; or *any* full year, sent unbound, for $1.50.....**Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as the original club.

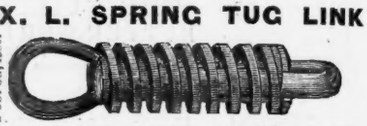
We learn that Higgin's Eureka Salt received first premium at the Australian Exposition, which is another added to the many triumphs of the Higgins improved process for salt manufacture.—*American Dairyman.*

GRATEFUL—COMFORTING.
EPPS' COCOA
BREAKFAST.
"BY a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast tables with a delicately flavored beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us, ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—*Civil Service Gazette.* Made simply with boiling water or milk. Sold in tins (only ½-lb and lb), labeled JAMES EPPS & CO., Homœopathic Chemists, London, Eng. New York and Chicago: SMITH & VANDERBEEK.

HARNESS.
A Good, Substantial Single Harness,
Hand-made, full nickel-plated for $13.50. Call and see or send for sample. Also a complete assortment of *RIDING SADDLES, BRIDLES, CARRIAGE ROBES and DUSTERS, HORSE CLOTHING and NETS.*
C. B. SMITH & CO., 40 Warren St., New York.

ECONOMY WASHER CUTTER.

(Pat. July 15, 1879). Cuts Washers of Leather or Rubber for carriages, wagons, mowing machines, and small machinery, from ½ to 5 inches in diameter. The best and cheapest Washer Cutter made. Sent by mail, prepaid to any address, on receipt of 50 cents. Liberal discount to Agents.
WILLARD BROS. & BARTLEY,
Cleveland, O.

I. X. L. SPRING TUG LINK
Patented Feb. 3d, 1880.

Affords the greatest protection to HORSES, Harness, Wagons, Plows, Mowers and Reapers. Reliable and guaranteed as represented. Protect your Horse, save your money, by procuring the celebrated D. RISHER & CO.'S I. X. L. Spring Tug Link. Ask your hardware man for them, or *send stamp for Circular* to D. RISHER & CO.,
79 Fourth Avenue, Pittsburgh, Pa.

W. S. BLUNT'S
IMPROVED UNIVERSAL
FORCE PUMPS.

These Pumps have an increased stroke, greater power, superior finish, and beauty of design. They can be placed in any desired position, as the Working Head rotates.
The upper Nozzle offers a straight water way through the Pump, saving much friction when filling a tank. Hose can be used at either Nozzle, if desired. A full assortment of these Pumps constantly on hand, for the house, and for out-door wells of the greatest depth. For power and reliability, these Pumps cannot be surpassed.
Complete outfits furnished to order, and advice given on all questions relating to Water Supply. Send for circulars.
W. S. BLUNT,
94 Beekman St., N. Y.
SAN FRANCISCO, CAL.,
Dunham, Carrigan & Co.
BOSTON, MASS.,
A. M. Morton & Co.,
W. S. BLUNT, 94 Beekman St., New York.

ADVERTISING RATES.
American Agriculturist.
ENGLISH EDITION.

Ordinary Pages, **$1.00** *per line* (agate), each insertion
Last Page, and Third Cover Page, **$1.25** *per line.*
Second Cover Page—**$1.50** per line.
Page next to Reading and Last Cover Page—**$2.00** per line.
No advertisement taken for less than **$3.00** each insertion.
Fourteen agate lines make one inch.

GERMAN EDITION.

Ordinary Pages, **10** cents per line, each insertion.
Second Cover Page, **15** cents per line.
Page next to Reading and Last Cover Page, **20** cts. per line.
No advertisement taken for less than **$1.00** each insertion.
☞ No Advertisement of Medicines or Humbugs received.

Address all orders to
ORANGE JUDD COMPANY, 751 BROADWAY, N. Y.